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REVIEW OF U.S. PATENT AND TRADEMARK OFFICE OPERATIONS, INCLUDING ANALYSIS OF GOVERNMENT ACCOUNTABILITY OFFICE, INSPECTOR GENERAL, AND NATIONAL ACADEMY OF PUBLIC ADMINISTRATION REPORTS

HEARING

BEFORE THE

SUBCOMMITTEE ON COURTS, THE INTERNET,
AND INTELLECTUAL PROPERTY

OF THE

COMMITTEE ON THE JUDICIARY
HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

SEPTEMBER 8, 2005

Serial No. 109–48

Printed for the use of the Committee on the Judiciary

Available via the World Wide Web: http://judiciary.house.gov

U.S. GOVERNMENT PRINTING OFFICE
23–324 PDF WASHINGTON : 2005

For sale by the Superintendent of Documents, U.S. Government Printing Office
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REVIEW OF U.S. PATENT AND TRADEMARK OFFICE OPERATIONS, INCLUDING ANALYSIS OF GOVERNMENT ACCOUNTABILITY OFFICE, INSPECTOR GENERAL, AND NATIONAL ACADEMY OF PUBLIC ADMINISTRATION REPORTS

THURSDAY, SEPEMBER 8, 2005

House of Representatives,
Subcommittee on Courts, the Internet,
and Intellectual Property,
Committee on the Judiciary,
Washington, DC.

The Subcommittee met, pursuant to notice, at 1 p.m., in Room 2141, Rayburn House Office Building, the Honorable Lamar Smith (Chair of the Subcommittee) presiding.

Mr. Smith. The Subcommittee on Courts, the Internet, and Intellectual Property will come to order. As is usually the case, I am going to recognize myself for an opening statement, then recognize the Ranking Member, then we will get to our witnesses as soon as possible.

Today the Subcommittee will conduct a hearing on the operations of the U.S. Patent and Trademark Office. This hearing responds to our obligation under House rules to conduct oversight of those entities that fall within our Committee's jurisdiction.

The PTO is the one of the most important agencies of the Federal Government, but it is often not regarded as such. It directly affects the producitvity and economic growth of our Nation as well as the standard of living for all Americans.

For over 200 years the PTO has been responsible for issuing U.S. Patents. The PTO advises the Secretary of Commerce and the President on patent, trademark and copyright protection, as well as on trade-related aspects of intellectual property.

The Subcommittee has conducted oversight hearings on PTO operations during the last two Congresses, but they have mainly dealt with fees and fee diversion. The scope of this hearing today will be much broader.

Recent reports by the GAO, the Patent Public Advisory Committee, the Inspector General's Office and the National Academy of Public Administration have all focused on day-to-day operations of the PTO. Among them are the patent application backlog, the implementation of the PTO's electronic application system, hiring and retention of patent examiners, the relationship between management and examiners, and the amount of time examiners require to process patents.

In addition, the PTO continues to implement its 21st Century Strategic Plan. The plan lays out a set of commitments aimed at improving quality and enhancing productivity for the PTO. Among other provisions, the plan promotes electronic processing of all patents and greater protection of American intellectual property internationally.

The PTO has long sought to improve its patent process through the use of electronic filing, and has spent over $1 billion in its efforts to provide an electronic patent filing system between 1983 and 2004. The GAO has made several recommendations to helpfully integrate an electronic system. This hearing will allow Members to acquire a status report on planned and ongoing efforts to modernize the office's operations, especially those that will lessen its reliance upon paper files and documents.

The Judiciary Committee proposes to authorize that the PTO collect and spend over $1.7 billion, subject to appropriation acts, from fee collections in fiscal year 2006 to cover operating expenses, including the payment of retirement benefits for employees.

In its submission, the Judicary Committee Members emphasized that they strongly support full funding of the PTO and the elimination of any incentive to use agency revenues for non-PTO purposes.

We look forward to discussing these and other issues of concern to the Members today. And before I recognize the Ranking Member, without objection I would like unanimous consent to put into our record the executive summaries of the reports that we have gotten, including the U.S. Patent and Trademark Office, *Transforming to Meet the Challenges of the 21st Century,* and that has been submitted by the National Academy of Public Administration, as well as the other reports we have as well.

I would like to put them all in the record, but when each report runs 300 pages, I think we better just focus on the executive summary.

And, once again, let me just say in conclusion, and, Director Dudas, this is directed toward you as much as anybody else, that I would be hard pressed to point to another Government agency that is as important as yours, that has as much responsibility as yours does, and has as much impact on the American people. But I hope that after today's hearing and in coming months, we will make sure that more people are aware of just how much the PTO contributes to our well-being.

[The information referred to is printed in the Appendix.]

Mr. SMITH. Now the gentleman from California Mr. Berman is recognized for his opening statement.

Mr. BERMAN. Thank you very much, Mr. Chairman, for recognizing me and for scheduling this oversight hearing.

The U.S. patent system is the cornerstone of innovation in our society. Throughout its more than 200-year history, the Patent Office provided incentives for inventors to innovate by providing them with protection for their ideas in the form of patents and trademarks. Intellectual property-based industries today represent the largest single sector of the U.S. Economy, and the USPTO is at the core.

As the Chairman said, it is probably not highly recognized among the public, and maybe even many of our colleagues, of the critical role that the USPTO plays in our economic progress, and in the advancement and benefits to quality of life that come from invention. There has been over the recent years criticism, charges of poor-quality patents and ever-increasing pendency of applications, both of which diminish the stature of the patent system and reflect poorly on the office's product.

I commend the Patent Office for implementing many of the initiatives cited in its 21st Century Strategic Plan, but nevertheless, challenges remain.

The first challenge is to us, not to the PTO. Everyone agrees, all of the witnesses agree, that we must stop fee diversion. Between fiscal year 1992 and 2004, the office lost access to $741 million of the fees it collected. A lack of funding is cited in multiple reports as the primary reason for increased pendency and for not implementing vital quality initiatives.

We can't continue to allow a perverse situation where we kneecap U.S. technology and economic leadership by diverting user fees to wholly unrelated uses. That is why many of us here today are original cosponsors of the Patent and Trademark Fee Modernization Act of 2005, to put an end once and for all to this tax on innovation.

However, the fee bill is only the starting point. In order to improve the operations of the Patent Office, we must make a number of fundamental reforms to the system. Patent pendency, the amount of time a patent is pending, now stands on average more than 2 years; backlog of applications awaiting a first review, 600,000. Without a change in the system, current levels are expected to grow to over 1,000,000 backlog by the year 2010. If you look solely at the most complex cutting-edge technologies where patent protection may be the most critical, average pendency is more than 3 years, not much higher than the average.

The light-speed pace of innovation makes this simply unacceptable. Many cutting-edge technologies will be long obsolete by the time the patent is granted. The troubling factor leading to the ever-increasing backlog of patent applications is the USPTO simply does not have enough experienced examiners to handle the demand.

I applaud USPTO for taking steps to increase the size of its patent examining corps, but attrition remains a serious problem. Only 45 percent of the Patent Office workforce has 5 or more years of service, and in an agency where it takes roughly 5 of 6 years before an employee becomes fully productive, this is a troubling statistic.

Another major issue in which the office struggles is the quality of patents. The current production quota system, known as the count system, has not been reevaluated since it was first introduced in 1976. The amount of information through which examiners must search to find relevant patent literature has exponentionally increased. Applications are growing evermore complicated, yet examiners still work under the 1976 assumptions.

Even with advances in the deployment of information technology, a number of studies have indicated that examiners today simply do not have enough time to do their job properly and have been encouraged to take a number of shortcuts. So the natural result? Quality of patents suffers.

Although USPTO has instituted some quality initiatives in recent years, I think there is still a long way to go. There are additional quality measures and changes to the patent system as a whole that we hope to address in the Patent Reform Act of 2005. I won't get into those now, they may come up in the context of questions, but they are a crucial part of the answer, I think, as well.

Thank you, Mr. Chairman. I yield back.

Mr. SMITH. Thank you, Mr. Berman.

Without objection, other Members' opening statements will be made a part of the record.

I would like to ask the witnesses to stand, if you would, so I can swear you in.

[Witnesses sworn.]

Mr. SMITH. Our first witness is Jon Dudas, Under Secretary of Commerce For Intellectual Property and Director of the the U.S. Patent and Trademark Office. In a previous life, Director Dudas worked for this Subcommittee, so we welcome him back. He earned a bachelor's degree in finance summa cum laude from the University of Illinois and a law degree with honors from the University of Chicago.

Our next witness is Ann Mittal, a Director with the National Resources and Environmental Team of the U.S. Government Accountability Office, or GAO. She is responsible for leading GAO's work in the areas of science and technology, water resources, and DOD's environmental compliance and clean-up activities. Ms. Mittal received a master's in business administration from the University of Massachusetts and recently completed the senior executive fellow program at the JFK School of Government at Harvard University.

The next witness is Mr. Ronald J. Stern, who is president of the Patent Office Professional Association. Mr. Stern holds a bachelor's degree from the City College of New York, and a law degree from George Washington University. He has worked as a primary examiner at PTO since 1964.

Finally, our last witness is Mr. Charles Van Horn. Mr. Van Horn is a partner at Finnegan, Henderson. He joined the firm after a 31-year career in the U.S. Patent and Trademark Office. During his tenure, he served in a variety of leadership positions relating to patent policy and practice. Mr. Van Horn holds a law degree from American University and a B.S. From Lehigh University.

Welcome to you all. As you know, we have a 5-minute limit on your testimony.

And going—just looking at this introduction, though, let me ask sort of out of turn a question. It looks like to me, Mr. Stern and Mr. Van Horn, did you both begin at PTO the same year, or close to the same year?

Mr. STERN. Exactly the same year.

Mr. SMITH. Now, that's not going to shade your testimony today, is it, because you were former colleagues?

Mr. STERN. We probably should consider ourselves as colleagues today.

Mr. SMITH. Good. Welcome you both and the other witnesses as well.

Now, Director Dudas, if you will begin.

TESTIMONY OF THE HONORABLE JON W. DUDAS, UNDERSECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY, AND DIRECTOR, U.S. PATENT AND TRADEMARK OFFICE (PTO)

Mr. DUDAS. Thank you very much, Chairman Smith, Ranking Member Berman, Congresswoman Lofgren and Congressman Inglis, for inviting me to testify on the state of the U.S. Patent and Trademark Office.

I first want to note very briefly that while so many eyes are on the southern part of the United States as we watch the horrible aftermath of Hurricane Katrina, while our core mission is not related to disaster relief, we at the USPTO are doing everything we can as part of the massive Federal effort to help those affected, and my office will work to assist anyone who is not able to meet required deadlines for filing, identifying attorneys and registered agents, identifying folks who can't receive mail and who need replacement files.

I want to note that our employees are coordinating charitable events and donating to relief organizations through the Combined Federal Campaign; we had over 1,000 people participate recently.

And that leads really to a second overall point that I feel is critical to make. I think everyone on this panel would agree our agency is heavily dependent on our people. And I cannot stress how highly I regard the employees at the USPTO. Their professionalism, their dedication, their effectiveness is unparalleled, and this is something that is acknowledged, I have seen, domestically and abroad by folks who work in other offices, and folks who work before other offices.

So I appreciate the opportunity to discuss the agency and the advancement of our IP system with you. You, the Members of this Subcommittee, have always been part of the solution, and we recognize that it is not always easy given the challenges that you face as Members of Congress.

That is why one of my proudest achievements, being part of a team at the USPTO, and with folks on this Subcommittee, is that we have dramatically improved the way the rest of Congress views the USPTO.

Mr. Chairman and Ranking Member Berman, you talked about making certain people understand how important this system is. A little over 4 years ago, there was a report that stated that the PTO had not been sufficiently innovative, a congressional report, one that said there wasn't full confidence in the information provided by PTO management regarding its needs and performance, and we needed to improve upon that. And under the leadership of President Bush and the guidance and efforts of the Members of this Committee, the last Congress voted 379 to 28 to affirm the USPTO strategic initiatives. So for your leadership, for the leadership of all of the Members of the Committee, I want to say thank you.

Let me use the first few moments to present what I think is a big oversight picture as I see it. And I am happy to go into whatever detail you want on any particular issue.

Our intellectual property system, as you noted, is fantastically successful, but it still faces great challenges internationally and domestically.

I have testified before that my job as director is not to identify problems and give excuses, but to identify opportunities and to deliver results, and I hope to live up to that and intend to live up to that.

With that in mind, let me tell you what I think we have all accomplished, what has been accomplished for the system in the last 3½ years, what still remains to be accomplished, and my thoughts on how we can achieve further success and address further challenges.

With respect to quality, our most important goal, we have moved, I believe, from an agency that had insufficient measures to one that constantly reviews the process and measures quality throughout the process. Moving forward, the challenge is to learn from all of the information we are collecting on quality. How can we improve training to prevent weak points? We must consider throughout all of our quality initiatives which are in place which are the most effective and which are less effective. We need to learn from them, and we need to learn about them.

We must constantly evaluate whether some initiatives need to be relaxed or adjusted for maximum effectiveness. And one thing I know for sure is that the examiners at the USPTO are objectively the most efficient and effective in the world. We must always be considering how to help them maintain their high, incredibly high, standards.

Our electronic processing. After more than 20 years of promises to have full electronic processing within the Office of Patents, the agency achieved that goal in 2 years, trained 6,000 people, and scanned hundreds of millions of pages of data. But there is a long way to go. We need to move to a text-based system that encourages high levels of electronic filing.

We need to look at the electronic system overall. While Trademarks has been tremendously successful with over 90 percent of trademark applications filed and processed electronically, we are still only at about 2 percent electronic filing in Patents.

Furthermore, upon meeting our initial goal of full electronic processing in Patents in a tight timeframe, we are moving forward more cautiously and more meticulously, putting in place all of the procedural safeguards to ensure that we get the most for our money on systems for the least cost. GAO's report has been of great help to us in that regard as we implement that report as well.

Finally, we must not ignore pendency. The volume of patent applications continues to outpace our current capacity to examine them, and that means backlogs are growing. We are still faster, less expensive and more efficient than the other major patent and trademark offices in the world, and without fundamental changes, changes I believe that must go beyond just hiring, though hiring is an incredibly important element of any way to address this issue, the pendency and backlogs will grow dramatically.

We appreciate that Congress passed legislation supporting many of the USPTO strategic initiatives, and since then we have accomplished a great deal in implementing some of the 21st Century Strategic Plan goals, but we still have more to do.

Let me use a few pictures to explain. Graphs are boring, but pictures are worth a thousand words. I think my time might be running out. The first graph I will show you is where pendency would be going. The red line you see is where pendency would be going if we had followed status quo, attrition hiring only, what we had to do over the last 3 years because of our budget and budget situation.

The green line is what we had under our strategic plan, which had two major initiatives, dramatic increases in hiring and competitive outsourcing. In the bill that passed in Congress, competitive outsourcing has been delayed, or at least an extensive and important pilot project that will delay outsourcing for 3to 5 years.

So what we have in the case if we follow the strategic plan without competitive sourcing, you see the blue. Pendency has been reduced, but it is still on the rise. So we have to do more when it comes to pendency. So as I show you chart 2, it shows you what we can do with dramatically more hiring.

I cannot show you chart 2. There we go. Chart 2 shows the original red line. That is status quo. If we go to a situation where we are, instead of hiring 860 to 750 a year, if we hire 1,000 new examiners per year, and work on reducing attrition, we can get to the yellow line, which is we are able to turn the pendency corner. This is without competitive sourcing, but with dramatically increased hiring. What I will tell you is that yellow line assumes a 6 percent increase. We used to assume a 5.5 percent increase. We changed it to 6 percent because we saw growth, and this year we are showing so far 7.7 percent increase in patent applications, so even higher than our expectations.

Mr. SMITH. Thank you, Director Dudas.

[The prepared statement of Mr. Dudas follows:]

PREPARED STATEMENT OF THE HONORABLE JON W. DUDAS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, UNITED STATES PATENT AND TRADEMARK OFFICE (PTO)

STATEMENT OF

THE HONORABLE JON W. DUDAS

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY
AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE

SUBCOMMITTEE ON COURTS, THE INTERNET, AND INTELLECTUAL PROPERTY
COMMITTEE ON THE JUDICIARY
United States House of Representatives

"USPTO Oversight Hearing"

SEPTEMBER 8, 2005

Introduction

Chairman Smith, Ranking Member Berman, and Members of the Subcommittee:

Thank you very much for inviting me to testify today. I commend you for your continued, vigorous oversight of the agency and for holding today's hearing.

The benefits of our patent system have long been obvious to Americans. The patent system is deeply rooted in our history. Article I, Section 8, Clause 8 of the U.S. Constitution grants Congress the power "to promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." The need for a statutory system to examine and grant patents was just as obvious. President Washington signed that first patent statute 215 years ago. History has repeatedly affirmed the wisdom of this decision of our Nation's founders. The tremendous ingenuity of American inventors, coupled with an intellectual property (IP) system that encourages and rewards innovation, has helped propel the growth of our nation from a small agrarian society to the world's preeminent technological and economic superpower.

The flexibility and strength of our intellectual property system have helped entire industries to flourish. Everyone has benefited from the innovative products encouraged by that system. Today, I would like to discuss a range of issues, including some of the challenges that the USPTO faces on an operational level, as well as our many workforce and human capital successes.

USPTO and Enhancing the Patent System

In recent years, numerous voices have called for patent reform on a number of levels -- USPTO operations and revising our laws and practices. For some time now at the USPTO, we have been considering a variety of internal reforms that will continue to enhance patent quality and address our increasing pendency challenges. It is our responsibility to do everything we can to improve the patent system in the United States -- something you too are doing by holding this hearing - and we must actively educate the world that it is fundamentally the best system.

Having the fundamentally best system is not enough. I am the first to acknowledge that even the best system in the world can and should progress. Today, we are implementing a range of improvements and are building on existing initiatives. The future requires that we work both domestically and with our international counterparts to develop the best patent system – in terms of patent quality and performance - for inventors both here at home and abroad.

Making commitments and keeping them has led to successes throughout the USPTO organization, including the implementation of the President's Management Agenda and the 21st Century Strategic Plan. The USPTO is now better equipped to handle the many important challenges that face our nation and our IP system at home and abroad.

While we have much to be proud about in our system, there is currently talk about whether our patent system should be reformed. In my capacity as the Under Secretary of Commerce for Intellectual Property and the Director of the Office that must examine these applications, I am pleased to work with you on USPTO operational reform and general patent law reform on behalf of the Administration. The support and enactment of the modernized patent and trademark fee schedule last December will help fund our Strategic Plan initiatives.

For the sake of certainty and the ability to undertake much-needed long-term planning, we would ask that Congress permanently extend the patent and trademark fee schedule that was only enacted for FY 2005 and 2006. We hope the reforms we have already undertaken – and the initiatives we are planning – give you confidence to trust us as responsible stewards of the U.S. patent and trademark systems.

USPTO – FY05 Reforms

Earlier this year, the USPTO announced additional initiatives to improve patent quality and efficiency, namely:

- **Increasing transparency;**
- **Improving *ex parte* reexamination; and**
- **Revamping our appeal-brief process to save applicants tens of millions of dollars**

A. Improved Transparency

As a measure to enhance patent quality and public confidence in our office, I have committed the USPTO to provide improved transparency in our operations. The USPTO will continue to report to the public more information, better information, and more meaningful information about our office and its performance. You will see us measure ourselves more often, more intensely, and with more useful data - data that will not only report quality and pendency statistics at the USPTO, but will present a real basis for measuring improvement.

Public PAIR - While implementing electronic tools to assist employees of the USPTO in doing their jobs, the USPTO has also provided Public PAIR - the Patent Application Information Retrieval system - to assist and benefit the public. Public PAIR allows anyone access to the entire file history of an application, including access to images of every paper of record for every published application in our database. With the click of a mouse, Public PAIR provides innovators information that is critical to understanding how a technology is evolving. This will help American industry better target its research and development investments, and be more responsive to the demands of the national and global marketplaces. Its counterpart for unpublished applications - Private PAIR - lets applicants access the entire file history of their applications in our Image File Wrapper ("IFW") database, saving time for applicants. These systems are truly milestones of achievement for the agency.

Meaningful Metrics - In the past, our pre-grant sampling of allowed patent applications showed an error rate that fluctuated between 3 percent and 7 percent. Our metrics were not as effective as they could have been in helping us evaluate and train our examiners about what went wrong and how to avoid that type of error in the future. Starting with the 21st Century Strategic Plan, we re-assessed ourselves; and today, we conduct more general reviews and in-process reviews. We now have more meaningful data from which to calculate quality baselines. We now use that information to identify points of error, and thereby to adjust training and interactions with examiners to improve our processes and our examination.

Until recently, our pendency measures were also not meaningful enough from the perspective of managing an office. Old ways of measuring pendency did not tell much and could be misleading. I have directed that those statistics be supplemented by additional measures to more fully reflect the current state of affairs in the USPTO and to show us specifically how we can improve. Our users will now know more of what we know. Thus, they will know better what they can expect from us, and they will be able to more informatively comment on our system.

Enhanced Review - We now review more work, and we review it in a smarter way. In some areas, we have tripled our number of reviews. We are looking at our error rates more deeply, and dissecting the issues causing errors. We can and are developing specialized training for examiners based on results from in-process reviews of our examiners' work. And as an enhanced quality measure, we have expanded the "second-pair-of-eyes" review in certain technology areas.

B. Improved Reexamination Process

Many of the issues raised and debated today about patent quality are pertinent to our reexamination system. Without entering the debate on the limitations of *inter partes* reexamination, legislative improvements thereto, or even post-grant review, there is no question that the USPTO can do much to improve the existing reexamination process.

The Problem - As background, we are focused on improving the reexamination process because it is the public's opportunity to say, "The Office got it wrong," without resorting to costly litigation. An *ex parte* reexamination proceeding is conducted within the USPTO when any person submits evidence of a substantial new question as to the patentability of the subject matter of an issued patent. The statute authorizing reexamination proceedings requires the USPTO to conduct this process with "special dispatch." Frequently, these proceedings require more than 100 hours of examiner time to complete. Today, a large number of reexamination proceedings have been pending before the USPTO for more than four years without resolution. We are just as dissatisfied with these results as are the stakeholders in the system.

Reexamination proceedings are important to patent owners and to the public as a means of resolving the issue of patentability without resorting to the high-cost option of litigation. In these proceedings, both timeliness and correctness of the decision are important to all parties to provide certainty. Therefore, we have an especially important duty to get it right here with special dispatch. However, many reexaminations are complex and time-consuming.

Our Solution - To address issues of timeliness and correctness of a patentability decision, the USPTO **this year** implemented a new process for handling reexamination proceedings. We are nearing the goal, set earlier this year, of eliminating all instances of *ex parte* reexamination proceedings that have been pending with an examiner for more than two years. Specifically, this initiative is on track to eliminate 420 proceedings pending over two years - of the current 1,200 pending *ex parte* reexamination proceedings.

If we had not undertaken this challenge, the total number pending over two years would have been 600 by the end of this year. Our commitment is that, by the end of FY 2005, the USPTO will set a defined time period for all future *ex parte* reexamination proceedings to be completed before the examiner, and the period will be less than the two years achieved in fiscal year 2005.

A similar clean-up effort is being conducted for all *inter partes* reexamination proceedings now pending before the USPTO. To address the issue of the correctness of the decision, the USPTO will require an expanded review of all USPTO decisions in any reexamination proceeding. It is expected that this process will employ a panel of least three supervisors and senior patent examiners. Further, by the end of this fiscal year, the USPTO will establish firm processing time periods for all reexamination proceedings ordered (after the Office order for reexamination) on or after October 1, 2005, for both *ex parte* and *inter partes* reexamination proceedings.

C. Making Pre-Appeal Brief Conferences More Citizen-Centered

Pre-Appeal Brief Conferences are another area where we are implementing the President's Management Agenda mandate that government be citizen-centered (not bureaucracy-centered) and results-oriented, by eliminating certain patent processing costs for citizens and expediting the appeal portion of this process.

The Problem - Before this year, when an applicant wanted to appeal a patent rejection with the Board of Patent Appeals and Interferences (BPAI), the applicant had to file a Notice of Appeal and an Appeal Brief outlining why the examiner's position is in error. The next step was an Appeal Conference with the examiner who decided the claims were not patentable joined by the examiner's supervisor and another experienced examiner or supervisor. Only after this conference, would the examiner prepare an Examiner's Answer explaining why the application was not allowable.

Our analysis revealed that, after the Appeal Conference, approximately 60 percent of cases were not forwarded to the BPAI for a decision. A conservative estimate of costs to applicants for preparing and filing the 60 percent of the Appeal Briefs that were never forwarded to the BPAI was $30,000,000.

Our Solution - To save applicants at least $30,000,000 annually, the USPTO implemented a program in the fourth quarter of FY 2005 that allows applicants to request a Pre-Appeal Brief Conference before preparing an Appeal Brief.

For a Pre-Appeal Brief Conference, it is not necessary for the members of the Pre-Appeal Brief Conference to review the full Appeal Brief to determine whether the examiner's action on that particular application was proper and should proceed to appeal. If the Pre-Appeal Brief Conference determines that the examiner's decision was not proper, the applicant will be notified that an appeal to the BPAI is not necessary at this time, thereby saving the applicant the cost of preparing and filing an Appeal Brief. If the Pre-Appeal Brief Conference determines that the examiner's decision was proper, the applicant will be notified to file an Appeal Brief in order for the application to go forward to the BPAI for a judicial decision. To assist in this evaluation, earlier this year the USPTO initiated a pilot program to create a corps of appeal conference specialists, who are trained in the way that the BPAI judges would review an appeal once it reaches the Board.

Growing Workload

In the last several years, IP assets have become an increasingly essential ingredient of economic vitality. Where once raw materials and other tangible goods were the main drivers of the economy, today economic success depends more and more on intangible, information-based assets, such as the creativity of employees and the knowledge gained from research. As a result, IP-based industries, such as biotechnology and motion pictures, now represent the largest single sector of the U.S. economy. In 2002, the U.S. copyright industries achieved estimated foreign sales and exports of $89 billion, leading all major industry sectors, including motor vehicles (equipment and parts), aircraft and aircraft parts, and the agricultural sector.

The growing importance of IP in recent years has had a direct impact on the USPTO. Patent applications have more than doubled since 1992. In the last five years alone, biotechnology-related patent filings increased 46 percent and pharmaceutical and chemical-related filings climbed 42 percent. Worldwide at our offices and our counterparts in Europe, Japan and other national IP offices 12 million patent applications are pending in the examination pipeline.

In addition to the sheer volume of these applications, the technical complexity of patent applications is rapidly increasing. One hundred years ago, more than one-third of our patent filings were bicycle-related. Today, we routinely examine patent applications in areas such as nanotechnology, bio-informatics, and combinatorial chemistry. Some of these patent applications come in on CD-ROMS that are literally the equivalent of millions of pages of paper.

The USPTO serves as an important catalyst for U.S. economic growth. Through the granting of patents and the registration of trademarks, the USPTO promotes the vitality of businesses and entrepreneurs, paving the way for investment capital and research and development. We are proud of our 215 year-old legacy of helping America become a technological and economic giant. To remain the best patent examination system in the world, we are focused on improving our quality and our productivity. Productivity improvements are critical as a mechanism to address our ever-increasing backlog.

The Patent Application Backlog – What Is It and Why Is It A Challenge?

We are encouraged by the fact that so many innovators are eager to take advantage of the patent system. However, as noted above, the volume and technical complexity of patent applications have increased beyond our ability to examine patent applications as they are filed, resulting in a backlog of patent applications awaiting examination.

One might think, as I did initially, that quality is not at all linked to the patent backlog. However, to examine applications in some complex art areas can take longer than examining more basic technologies. Further, over the past twenty years, the number of complex applications as a percentage of the USPTO's overall patent workload has increased, from 21% in 1985 to 52% in 2005. The rise in the number of complex applications as a percentage of overall applications – and the problems created by this rise in complex cases - is sometimes referred to as "technology creep."

Patent pendency (the amount of time a patent application is pending before a patent is issued) now averages more than two years. In some complex arts, such as data processing technologies, average pendency stands at more than three years. Without fundamental changes in the way USPTO operates, average pendency in these areas could reach six to eight years by 2008. Moreover, without any change to the system, the backlog of applications awaiting a first review by an examiner is expected to grow from the current level of approximately 600,000 to over 1,000,000 by 2010.

Our delays negatively impact the public, our economy and-/or other patent offices by failing to timely provide patent protection where due. Small and developing businesses often times rely solely on patent protection to attract venture capital, making timely processing of patent applications critical to their success. Our challenge is to ensure that every one of the patent applications we receive is processed in a timely manner. The significant backlog before the office obviously affects our ability to timely process patent applications.

To put this backlog into some perspective, imagine if the USPTO closed its doors today. It would take our current examining corps approximately two years to examine all of the cases currently before the Office. When we opened our doors two years later, our patent examiners would be faced with a collective workload of new applications totaling approximately 800,000.

To ensure a fair and timely patent system for all, the United States must take seriously the issue of a patent backlog. Our patent system continues to prove its strength through the new inventions described in patent applications we see every day, the growth of investment, and the fact that the Office receives record numbers of applications each year (i.e., 375,000 new patent applications last year alone). But, especially for independent inventors and small businesses, delay can mean disaster. The entrepreneur needs to know as soon as possible whether he or she will have exclusive rights in a particular innovative technology. The longer the wait to obtain a decision from the USPTO, the longer the period of uncertainty – sometimes with very real financial consequences.

Principles of good government, as well as the nature of technology and the nature of the marketplace make these processing delays unacceptable -- and unsustainable. If IP protection is to continue to serve as a catalyst for technological innovation and economic growth, the USPTO must fundamentally break with the status quo. If we are to issue quality patents in a timely manner, we must fundamentally reform the way we do business. We must be prudent in developing the processes that will make the patent system more effectively serve its purposes.

How Can the USPTO Reduce the Patent Backlog?

One important approach to addressing the patent backlog can be summarized as "Hire More, Train Better, Retain Better, and Telecommute."

Expanding our Workforce

One of the key elements to address productivity as part of the 21st Century Strategic Plan was the hiring of additional examiners. The USPTO is a team of 7,000 people, including more than 4,000 scientists, engineers, and PhDs. We have an incredibly dedicated corps of patent examiners and technical support staff. I have met with hundreds of examiners individually, collectively, in tech center meetings, at union meetings, at retirement parties, and just walking the halls. Those who make a career at the USPTO have unique and extensive skill sets and are dedicated, engaged, and knowledgeable. They not only know their art, but also are keenly aware of the outside pressures on our office. We want to make sure that, as we hire, we find new people who have that same energy, drive, commitment and aptitude to succeed as patent examiners.

Earlier this year, I challenged all of USPTO's senior managers – not only our patent managers – to find a way to hire more patent examiners, train them better, retain them better, and encourage telecommuting. In FY05, which ends in just a few weeks, we will have hired approximately 940 patent examiners, which represents about a 25% increase in our examining staff. We plan then to hire an additional 1,000 patent examiners each fiscal year, through fiscal year 2011.

Training Better and Retaining More

Hiring at this rate – which we must do to address the growing number of new applications, as well as to handle our existing backlog – raises several challenges. How will we train all of these new employees, ensuring that they can examine properly? Where will they be located? And, how can we make sure their experience at the USPTO is a good one?

Effective January 2006, the USPTO plans to unveil a completely new approach to training new patent examiners. The USPTO will teach new examiners in a collegial and collaborative environment, providing up to eight months of intensive coursework on examination and relevant legal issues. This represents a very significant increase in initial training. The goal is to provide our Technology Centers with examiners who know how to draft complete and high quality office actions when they "graduate" to examination art units. The combination of more comprehensive initial training for a longer period of time will, we hope, provide our newest patent examiners with the confidence, skills, and support network they need to be successful.

Expanding Telecommuting

We are working aggressively to expand telecommuting opportunities for patent employees. We are currently piloting a telecommuting program where approximately 200 patent volunteers are testing and trouble-shooting hardware, software, and new business process configurations to help USPTO fine-tune the equipment and software we will use for a more comprehensive telecommuting program. Our goal is to have 820 patent telecommuting participants in FY06, with a five-year plan of approximately 3,000 patent telecommuting participants by FY11.

More focused initial training is integral to our ability to have so many patent examiners participate in telecommuting. The more skilled our overall patent examination workforce becomes, the more the USPTO can permit senior patent mentors – and their junior counterparts – to work at home and still interact with colleagues and maintain the highest levels of patent examination quality.

Reducing the Patent Backlog and Enhancing Quality – A Shared Responsibility

Hiring more – and its corollaries: training better; retaining employees; and encouraging telecommuting – helps attack the growing backlog of unexamined patent cases. However, under current and foreseeable circumstances, it cannot be the only answer.

I have definitely found areas where the USPTO can improve, and I am concentrating all my efforts on implementing necessary improvements. Some of these improvements have been identified over the past few years as a result of talking to our patent examiners. One message that I have repeatedly heard from examiners is that the number one challenge facing them is the problem of application quality. Applicants file applications as direct translations, in incomplete form, or with claims that do not conform with practice, among other inaccuracies, which result in unfocused examinations and lead to extending prosecution and pendency, while increasing applicants' costs.

Processing applications faster – without sacrificing quality – is possible. Like any production environment, if systems can move more quickly, or inputs (applicants' submissions) can be pre-fabricated, it is possible to produce a great product, possibly an even better product.

As our examiners have noted, the most important input we receive is the patent application itself. If the application is "pre-fabricated," that is, if it is complete, clear, well-drafted, with well-identified, pertinent references, it takes less time to properly examine, permitting a focused examination on the most important aspect of innovation. Thus, a better input contributes directly both to speed of processing and to quality.

Patent examination that concentrates on evaluating the most pertinent information relevant to patentability increases the opportunity for the system to "get it right" the first time. For applicants, this allows the proper assessment of any amendments or changes to the patent application and claims that may be required to result in a properly granted patent. For examiners, this means that their examination should be focused on the prior art most relevant to determining whether the claimed invention is patentable. Ensuring such a focused examination is a joint responsibility of the examiner and the applicant. By working to improve the ways that this information comes before the examiner, we will best achieve the goal we all share of high quality patent grants that have the respect and trust of the entire patent community.

Viewing the issues of quality and the backlog in a practical light, it becomes clear that one prudent approach is to make sure that examination is focused to be effective. Two of the more common practices that impair focused examinations are identified below.

Rework and "Continuations"

The current patent system allows for reworking of applications through what is known descriptively as "the continuation process." While there may have been a time where the system could afford unlimited duplication and redundancy, that time is not now.

In FY04, more than 26% (or 100,000) of the USPTO's new applications were some form of application that had previously been before an examiner in the examination process. That is, almost a third of the applications that examiners had to review were ones they had rejected in some fashion, that the applicant had then tweaked in the hope that they would be acceptable. Had the applicant revised the application earlier in the process, such rework might not be necessary. Given the volume of "continuations" – which include a large variety of technical variations, such as divisional applications, continuations-in-part, and "RCEs" (Request for Continued Examination) – it becomes clear that the patent system as it currently operates presents a significant obstacle to the ability of our examiners to reach new applications that have not been examined in any form.

Some reform that would inject more discipline into the general "continuation" practice would, obviously, increase our ability to focus on truly new applications and innovations. USPTO is presently evaluating ways to bring more discipline to this area of practice.

Patent Applications and Extraordinary Numbers of Claims

A critical portion of the patent application is "the claim" or "claims." The claims define what is being patented.

Every year, a small number of applications are filed with an extraordinary number of claims. These filings present our examiners with enormous challenges in ascertaining the nuances and incremental differences among the claims presented. These challenges directly affect the ability of our examiners to conduct the high quality examination process that all of us expect from our patent system. Accordingly, the burden that such applications pose can impede our ability to promptly examine applications relating to other inventions. At the same time we must recognize the legitimate need for applicants to present these claims in some applications. We are exploring initiatives that will help to find the right balance – to look for ways in which inventors can submit such applications when needed while making it feasible for examiners to effectively examine such a plethora of claims.

International Intellectual Property-Related Efforts

While focusing the bulk of this testimony on issues relating to my position as Director of the United States Patent and Trademark Office, I would be remiss if I did not also focus on efforts and initiatives pursued as the Under Secretary of Commerce for Intellectual Property.

The Administration, the Department of Commerce, and the USPTO are keenly aware of the increasing significance of IP protection to American businesses and innovators. It is no secret that this Administration has made combating piracy and counterfeiting top priorities.

USPTO's international IP-focused efforts have increased substantially at the direction of both the Administration and the Congress. Passage of the American Inventors Protection Act of 1999 ("AIPA") (P.L. 106-113) set the stage for the USPTO to advise the President, through the Secretary of Commerce, and all Federal agencies, on national and international IP policy issues, including IP protection in other countries. USPTO is also authorized by the AIPA to provide guidance, conduct programs and studies, and otherwise to interact with foreign IP offices and international organizations on matters involving IP protection.

USPTO's Offices of International Relations and Enforcement actively carry out the functions authorized by the AIPA, which include:

1. Working with Congress to implement international IP treaties;
2. Providing technical assistance to foreign governments that are looking to develop or improve their IP laws and systems;
3. Training foreign IP officials on IP administration and enforcement;
4. Advising the Department of State and the Office of the United States Trade Representative (USTR) on drafting/reviewing IP sections in bilateral and multilateral investment treaties and trade agreements;
5. Advising USTR and the Department of State on IP issues in the World Trade Organization (WTO); and
6. Working with USTR, the Department of State, and American industry on the annual review of IP protection and enforcement under the Special 301 provisions of the Trade Act of 1974.

USPTO also joins the Department of State in representing the United States in United Nations bodies, such as the World Intellectual Property Organization (WIPO), to help set international standards for IP protection and enforcement.

USPTO is actively involved in the Administration's STOP! (Strategy Targeting Organized Piracy) initiative. STOP! is the most comprehensive intergovernmental agency initiative ever advanced to smash the criminal networks that traffic in fakes, stop trade in pirated and counterfeit goods at America's borders, block bogus goods around the world, and help America's small businesses secure and enforce their IP rights in overseas markets. The STOP! initiative will raise the stakes for international IP thieves by more aggressively pursuing perpetrators of IP crimes and dismantling criminal enterprises.

Attorneys from the USPTO manage a STOP! Hotline, 1-866-999-HALT, established by the Department of Commerce to help American businesses protect their IP at home and overseas. The goal of the hotline is to empower U.S. businesses to secure and enforce their IP rights by providing them the information they need to secure their patents, copyrights, and trademarks, and to enforce these rights – both here in the U.S. and abroad. Businesses and innovators have access to a place to learn more about the risks of global piracy and counterfeiting and how to protect their IP rights in both individual and multiple countries.

To better serve the public, along with other agencies participating in the STOP! initiative, we have established a link from our USPTO website to www.StopFakes.gov on the Department of Commerce's website. The www.StopFakes.gov website provides in-depth information on the STOP! initiative and offers guidance on IP registration, border enforcement, protecting and enforcing IP rights overseas as well as information on U.S. criminal IP enforcement efforts.

The Department of Commerce is in charge of another important component of the STOP! initiative, the "No-Trade-In-Fakes" program, which is being developed in cooperation with the private sector. No-Trade-In-Fakes is a voluntary, industry-driven set of best practices and guidelines that participating companies will use to ensure their supply chains and retail networks are free of counterfeit or pirated goods.

The Departments of Commerce and State collaborated to create the China IPR Toolkit, which is available along with other country-specific Toolkits, at www.StopFakes.gov. The toolkit provides detailed information on China's IP rights regime and resources for protection. Additional country-specific toolkits are under development.

The USPTO has recently undertaken a public-outreach campaign designed to heighten awareness in America's small business community of the importance of obtaining IP protection and ways in which IP rights can be protected and enforced overseas. The USPTO launched this effort in Salt Lake City, Utah, in May 2005, by holding the first in a series of free seminars on IP, piracy and counterfeiting. A second seminar was held in June in Phoenix, Arizona, and additional seminars are scheduled for Austin, Texas (September 12 – 13), and Miami, Florida (September 26 – 27). At these seminars, lawyers and other professionals from the USPTO provide individual inventors, small- and medium-size businesses, and artistic creators with specific details and useful tips about how to protect their IP rights in the United States and overseas, and how to enforce them both domestically and internationally.

Human Capital Achievements

While I know you are most interested today in reviewing our patent operations, we are also proud of the progress we have made in a number of our human capital programs that have a direct impact on the quality of life of our workforce, for example expanding work@home programs to our employees. In fact, we are considered a leader in work@home among Federal agencies in the Washington, D.C. metropolitan area.

The USPTO's telecommuting efforts have been recognized and benchmarked by the General Services Administration and the Partnership for Public Service. We have an award-winning telecommuting program in Trademarks. Currently, more than 64% of our Trademark examination workforce - or 180 examiners - telecommute. We plan to expand the program to more than 200 examiners by the end of 2005. As noted above, 200 patent employees are currently involved in a telecommuting pilot, with expansion of the program planned to involve over 800 patent employees by the end of FY06.

I am also pleased to report that we successfully transitioned to our new consolidated headquarters in Alexandria, in what is one of the largest federal moves in history. The five linked buildings that make up USPTO's new facility contain approximately two million square feet of office and related space. The Government Accountability Office has concluded that the consolidation will likely save us more than $98 million in present value dollars over the initial 20-year lease term.

Trademark Operations

Our e-government initiatives for Trademarks have met with substantial success. The total number of requests for trademark registration increased by 6.9% over the same period a year ago. More than 190,444 applications – containing 236,488 classes[1] – were filed in FY05 through June 2005. During this time, more than 86% of the application classes received for registration of a mark or a request for extension of protection under the Madrid Protocol have been filed electronically. More than 92% of the applications filed in June 2005 were received electronically.

Lower Fees For Electronic Filing and Processing - On July 18, 2005, the USPTO introduced a new form within the Trademark Electronic Application System (TEAS) that allows all citizens to file applications for trademarks and service marks directly over the Internet at a **lower** fee than previously required for similar applications. This new form, known as "TEAS Plus," supplements the existing TEAS initial application form, which has existed since October 1, 1998. The TEAS Plus form offers not only the advantage of having a fee that is $50 **less** than the regular filing fee, but also automatically improves USPTO's trademark processing quality by using enhanced form edits and validation functions to help applicants submit the most complete application possible.

On the first full day of TEAS Plus production, 17% of all electronically filed new applications were submitted using this new option. By the end of the fifth week after deployment, TEAS Plus usage had risen dramatically, accounting for 38% of all trademark electronic filings.

Conclusion

The USPTO's successes are successes for America and American enterprise. These successes range from the implementation of the full electronic processing of patent applications with the Image File Wrapper (IFW) to the many family-friendly programs that benefit our workforce. We are committed to ensuring that our practices and policies promote the innovation and dissemination of new technologies. And, while we work to improve our system by internal reform of USPTO operations, we realize that additional measures within the domain of Congress will make invaluable contributions.

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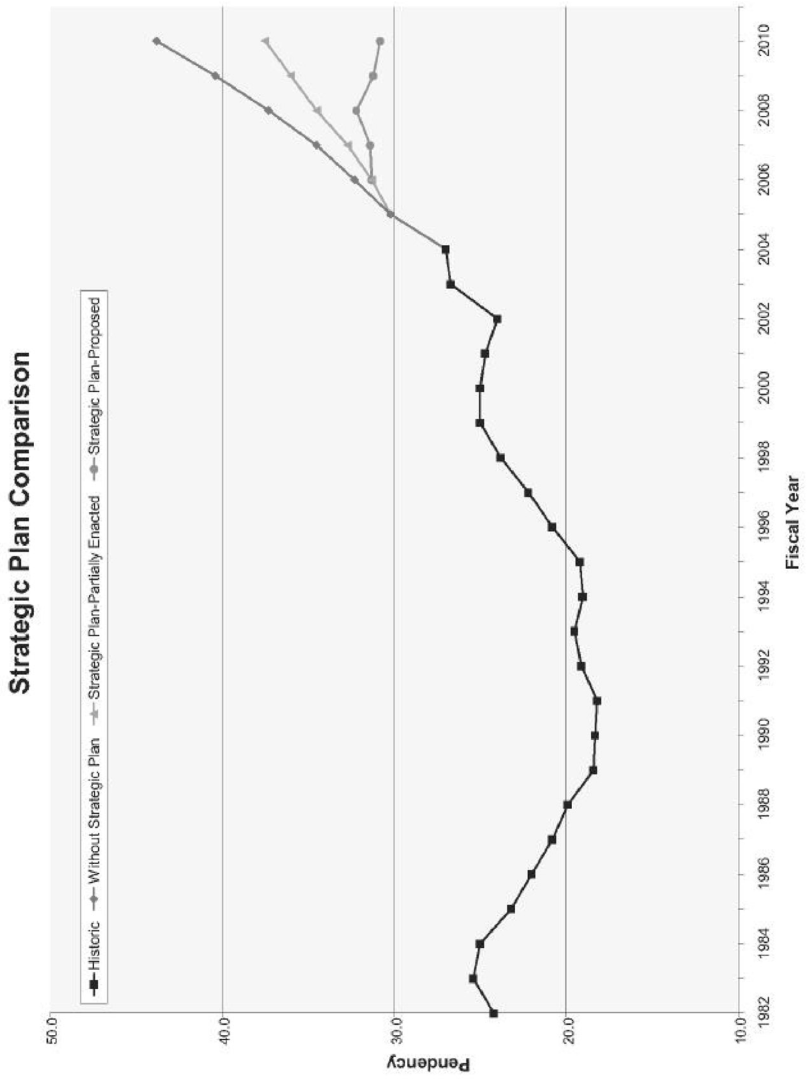
[1] **"Classes"** = the different types of goods or services for which an applicant seeks trademark registration. For example, an applicant may request registration of the mark "XYZ" for shoes – which are in one class – and watches, which are in another class. Classification makes it easier for the public to find potentially conflicting marks. Since a mark must undergo legal analysis for each class of goods or services identified, the USPTO counts its trademark workload by classes filed per application.

The overwhelming evidence of the history of the U.S. patent system suggests that strong IP protection supports, rather than impedes, innovation. Indeed, for more than 200 years, our patent system has helped American industry flourish, creating countless jobs for our citizens. Advanced technologies have been -- and continue to be --nurtured and developed in our nation to a degree that is unmatched in the rest of the world. In many instances, the availability of patent protection has been integral to these advancements.

The USPTO and the Administration look forward to continuing to work with you and the Members of the Subcommittee to ensure that the U.S. patent system remains the envy of the world.

Thank you, Mr. Chairman.

ATTACHMENT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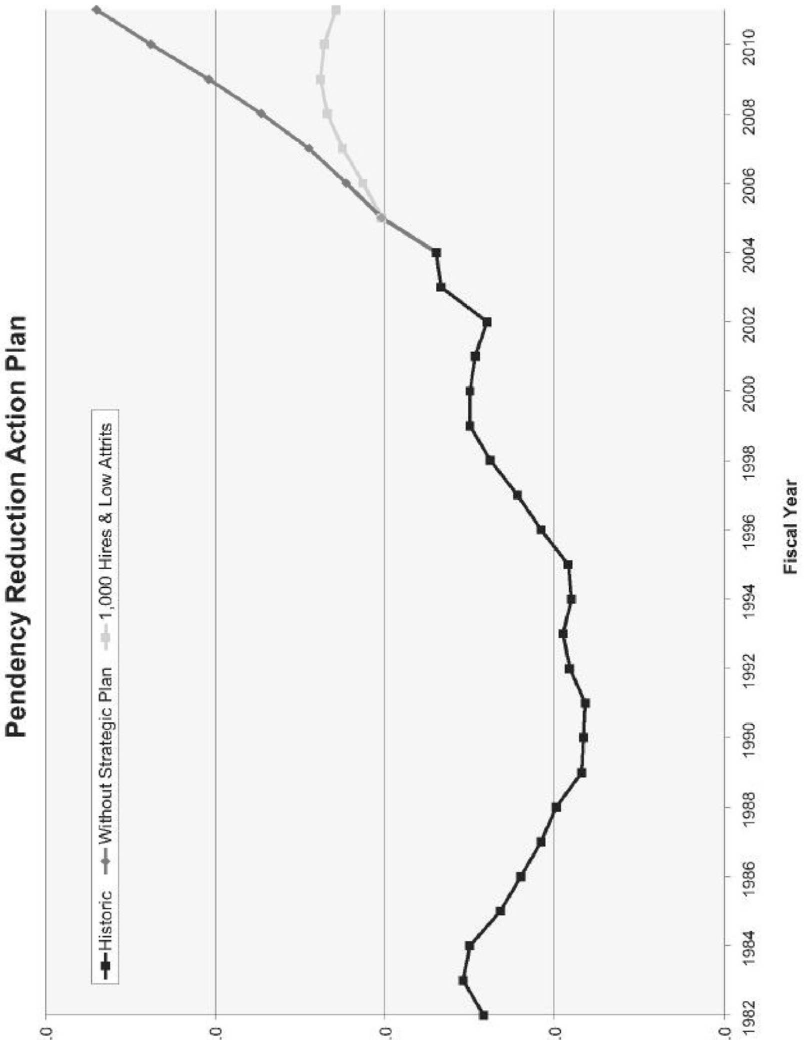
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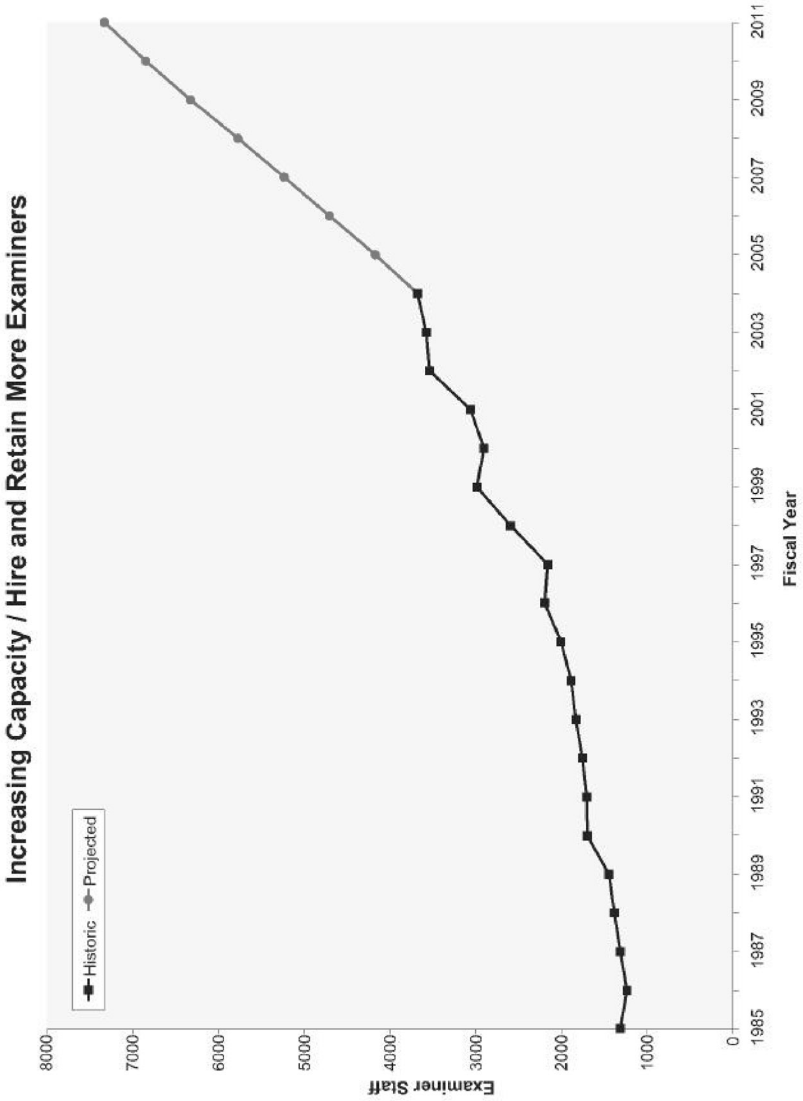
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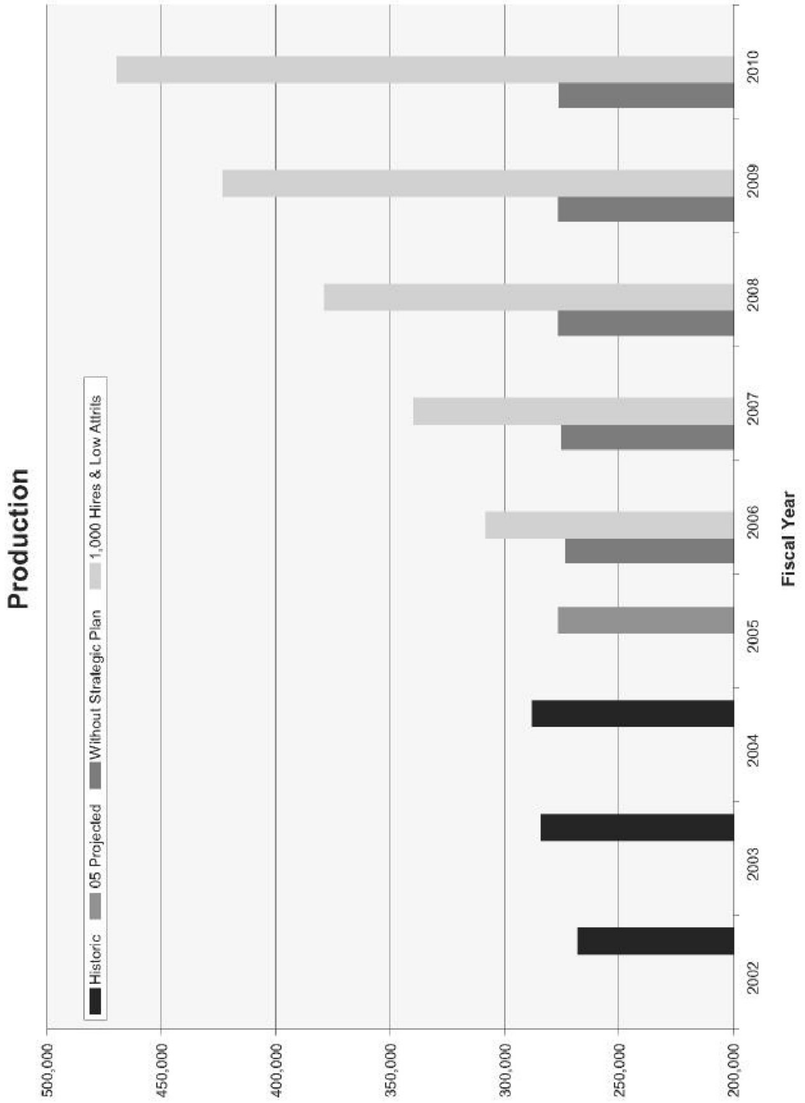
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Mr. SMITH. Ms. Mittal.

TESTIMONY OF ANU K. MITTAL, DIRECTOR, SCIENCE AND TECHNOLOGY ISSUES, U.S. GENERAL ACCOUNTABILITY OFFICE (GAO)

Ms. MITTAL. Mr. Chairman and Members of the Committee, we are pleased to be here today to participate in your oversight hearing of the Patent and Trademark Office.

My testimony today summarizes the results of two GAO reports that were issued in June of this year. The first report addressed PTO's ongoing efforts to achieve a paperless electronic patent process, and the second report addressed steps that PTO has taken to attract and retain a qualified patent examination workforce.

As you know, over the last 10 years, there has been a significant increase in the volume, complexity and backlog of patent applications that PTO has to process. This has lengthened the time that PTO takes to process patents, and it has also raised concerns about the quality of the patents that are issued.

Further complicating this picture is the fact that the agency has had difficulty competing with the private sector in attracting and retaining a highly qualified patent examination workforce.

Over the last two decades, and in particular during the last 5 years, PTO has undertaken various efforts to improve its patent-processing capabilities. However, our two reviews found that the agency continues to face major challenges in these efforts. Specifically, we found that after two decades, and after having spent over $1 billion, PTO has made some progress, but has not yet achieved its goal of implementing an integrated, paperless, fully automated patent-processing environment.

More importantly, when and how PTO will actually be able to achieve this capability remains uncertain. This is largely because PTO has not yet fully instituted disciplined processes and practices for managing its investments in information technology. We found that some of the primary systems that the agency is relying on to enhance its capability, like the electronic filing system and image file wrapper, have not yielded the level of processing improvements that PTO had hoped for. For example, PTO had hoped that by 2004, 30 percent of all patent applications would be filed electronically. But as of April 2005, fewer than 2 percent of all applications were submitted in this format.

Because of ineffective planning and management of its automation initiatives, PTO is at risk of implementing additional information technology that does not support its needs. It is also at risk of not achieving its goal of implementing a fully electronic patent application process.

What is particularly troubling to us is that this is not a new issue for PTO. In 1993, we raised similar concerns about the agency's ability to adequately plan and manage its automated patent system. And we pointed out weaknesses in its specific management controls.

As our report—recent report documents, many of the concerns that we had 12 years ago with PTO's processes have not diminished. Improvements are still needed if the agency hopes to successfully implement a paperless electronic patent process.

With regard to PTO's efforts to attract and retain a qualified patent examiner workforce, the story is slightly better. PTO has taken several steps to enhance its recruiting efforts, and has used many of the human capital flexibilities available under Federal personnel regulations to hire over 2,300 examiners in the last 5 years. However, for several reasons we are concerned about PTO's ability to retain these examiners in the future. First, PTO's recruiting efforts and benefits have only been available for a short time, and during this time, because of budgetary constraints, they have not been consistently sustained. Second, the impact of the economy is still unknown. In the past when the economy was doing well, the agency had more difficulty recruiting and retaining staff. And finally, and maybe most importantly, PTO lacks an open, transparent and collaborative work environment, which has created an atmosphere of distrust and a significant divide between managers and examiners on important issues that we believe could affect retention.

Both of our reports made a number of recommendations to PTO, and agency officials have stated that they plan to take actions that will address the recommendations we made. We look forward to monitoring PTO's progress as it implements actions to respond to our recommendations.

Mr. Chairman, this concludes my statement. Thank you.

Mr. SMITH. Thank you, Ms. Mittal.

[The prepared statement of Ms. Mittal follows:]

PREPARED STATEMENT OF ANU K. MITTAL, DIRECTOR, SCIENCE AND TECHNOLOGY ISSUES, U.S. GENERAL ACCOUNTING OFFICE (GAO)

United States Government Accountability Office

GAO

Testimony
Before the Committee on the Judiciary,
House of Representatives

For Release on Delivery
Expected at 1:00 p.m. EDT
Thursday, September 8, 2005

INTELLECTUAL PROPERTY

Improvements Needed to Better Manage Patent Office Automation and Address Workforce Challenges

Statement of Anu K. Mittal, Director
Science and Technology Issues
and
Linda D. Koontz, Director
Information Management Issues

G A O
Accountability * Integrity * Reliability

GAO-05-1008T

GAO
Accountability•Integrity•Reliability

Highlights

Highlights of GAO-05-1008T, testimony before the House Committee on the Judiciary

September 8, 2005

INTELLECTUAL PROPERTY

Improvements Needed to Better Manage Patent Office Automation and Address Workforce Challenges

Why GAO Did This Study

The United States Patent and Trademark Office (USPTO) is responsible for issuing patents that protect new ideas and investments in innovation and creativity. However, the volume and complexity of patent applications to the agency have increased significantly in recent years, lengthening the time needed to process patents and raising concerns about the validity of the patents that are issued. Annual applications have grown from about 185,000 to over 350,000 in the last 10 years and are projected to exceed 450,000 by 2009. Coupled with this growth is a backlog of about 750,000 applications. Further complicating matters, the agency has faced difficulty in attracting and retaining qualified staff to process patent applications.

USPTO has long recognized the need to automate its patent processing and, over the past two decades, has been engaged in various automation projects. More recently, in its strategic plan, the agency articulated its approach for accelerating the use of automation and improving workforce quality. In two reports issued in June 2005, GAO discussed progress and problems that the agency faces as it develops its electronic patent process, its actions to attain a highly qualified patent examination workforce, and the progress of the agency's strategic plan initiatives.

At the Committee's request, this testimony summarizes the results of these GAO reports.

www.gao.gov/cgi-bin/getrpt?GAO-05-1008T.

To view the full product, including the scope and methodology, click on the link above.For more information, contact Anu Mittal at (202) 512-3841 or mittala@gao.gov or Linda Koontz at (202) 512-6240 or koontzl@gao.gov.

What GAO Found

As part of its strategy to achieve an electronic patent process, USPTO had planned to deliver an operational patent system by October 2004. It has delivered important capabilities, for example, allowing patent applicants to electronically file and view the status of their applications and the public to search published patents. Nonetheless, after spending over $1 billion on its efforts from 1983 through 2004, the agency has not yet developed the fully integrated, electronic patent process articulated in its automation plans, and when and how it will achieve this process is uncertain. Key systems that the agency is relying on to help reach this goal—an electronic application filing system and a document imaging system—have not provided capabilities that are essential to operating in a fully electronic environment. Contributing to this situation is the agency's ineffective planning for and management of its patent automation initiatives, due in large measure to enterprise-level, systemic weaknesses in its information technology investment management processes. Although the agency has begun instituting essential investment management mechanisms, such as its enterprise architecture framework, it has not yet finalized its capital planning and investment control process, or established necessary linkages between the process and its architecture to guide the development and implementation of its information technology. The Under Secretary of Commerce for Intellectual Property and the agency's chief information officer have acknowledged the need for improvement.

USPTO has taken steps to attract and retain a highly qualified patent examination workforce by, for example, enhancing its recruiting efforts and using many of the human capital benefits available under federal personnel regulations. However, it is too soon to determine the long-term success of the agency's efforts because they have been in place only a short time and have not been consistently sustained because of budgetary constraints. Long-term uncertainty about the agency's hiring and retention success is also due to the unknown impact of the economy. In the past, the agency had more difficulty recruiting and retaining staff when the economy was doing well. Further, USPTO faces three long-standing challenges that could undermine its efforts: the lack of an effective strategy to communicate and collaborate with examiners, outdated assumptions in production quotas that it uses to reward examiners, and the lack of required ongoing technical training for examiners. Patent examiners said the lack of a collaborative work environment has lowered morale and created an atmosphere of distrust between management and patent examiners.

Overall, USPTO has made more progress in implementing its strategic plan initiatives aimed at increasing its patent processing capability through workforce and process improvements than in its initiatives to decrease patent pendency and improve electronic processing. It has fully or partially implemented all 23 capability initiatives, but only 8 of 15 initiatives to reduce patent pendency and improve electronic processing. The agency cited a lack of funding as the primary reason for not implementing all initiatives.

Mr. Chairman and Members of the Committee:

We are pleased to be here today to participate in your oversight hearing of the United States Patent and Trademark Office's (USPTO) efforts to modernize its patent application processing capability. Our testimony focuses on several critical aspects of the agency's overall goal: (1) its ongoing initiative to achieve a paperless, electronic patent process, (2) its actions to attract and retain a highly qualified patent examiner workforce and address human capital challenges, and (3) the implementation of critical initiatives outlined in its 21st Century Strategic Plan—issued in 2002 in response to a congressional requirement that the agency improve patent quality, implement electronic government, and reduce the number of pending patent claims.[1]

Rapid growth in both the volume and complexity of patent applications to USPTO has lengthened the time needed to process patents and has raised concerns among intellectual property organizations, patent holders, and others about the quality of the patents that are issued. Over the last 10 years, the number of patent applications filed annually has increased 91 percent, from about 185,000 in 1994 to over 350,000 in 2004. Along with this growing workload is a 28-month backlog of approximately 750,000 applications. Further complicating this picture, is that USPTO's resources have not kept pace with the increases in its patent workload. Agency officials acknowledge that, at times, they have had difficulty competing with the private sector to attract and retain staff with the high degree of scientific, technical, and legal knowledge required to be patent examiners.

Recognizing the need to improve its patent processing capability, over the past 2 decades, USPTO has undertaken various efforts to automate its patent process. In addition, as part of an aggressive 5-year modernization effort outlined in its strategic plan, the agency has articulated its approach to creating a more productive and responsive patent organization through accelerating its use of automation and enhancing the quality of its patent examination workforce. At the request of the Committee, our testimony today summarizes the work presented in two reports that we issued in June 2005—one addressing the agency's progress, and problems faced, in developing and using electronic information and systems to achieve its automated patent processing capability[2] and the other addressing its steps to attract and retain a workforce of qualified patent examiners, three long-standing human capital challenges that could undermine recent efforts, and the overall status in implementing its strategic plan.[3]

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[1] Patent and Trademark Office Authorization Act of 2002, Pub. L. No. 107-273, § 13104, 116 Stat. 1899, 1900, required USPTO to develop a 5-year strategic plan for meeting these three requirements. USPTO also prepared the Strategic Plan to fulfill the requirements of the Government Performance and Results Act.

In summary, we found the following:

USPTO is pursuing a long-standing strategy to implement a paperless, electronic patent process, with the goal of replacing the manual processing of applications with an electronic process for researching patent information and viewing and manipulating application text throughout all processing phases. While the agency has achieved important electronic capabilities through information systems that it has implemented, such as electronic filing and patent application classification and search, collectively these functions have not provided the fully integrated electronic patent processing capability articulated in its automation plans. Two of the primary systems that the agency is relying on to enhance its capabilities—its electronic filing system and a document imaging system that it acquired from the European Patent Office—have not yielded processing improvements that the agency considers essential to operate successfully in an electronic environment. Contributing to this situation are ineffective planning and management of its patent automation projects—due in large measure to enterprise-level, systemic weaknesses in its information technology investment management processes.[4] Although the agency had begun instituting certain essential investment management mechanisms, it had not yet finalized its capital planning and investment control process and had not established the necessary linkages between the process and its enterprise architecture to ensure that projects will comply with the architecture.[5] As a result, the agency had not rigorously assessed its patent systems' compliance with the enterprise architecture and it lacked reliable experience-based data to consistently demonstrate the costs and benefits of its systems.

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[2] GAO, *Intellectual Property: Key Processes for Managing Patent Automation Strategy Need Strengthening*, GAO-05-336 (Washington, D.C.: June 17, 2005).

[3] GAO, *Intellectual Property: USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain*, GAO-05-720 (Washington, D.C.: June 17, 2005).

[4] A key requirement of the Clinger-Cohen Act of 1996 (40 U.S.C.§11312) is that agencies have capital planning and investment control processes. Such processes aid management by providing a means to obtain necessary information about the progress of an investment in terms of cost, capability of the system to meet specified requirements, timeliness, and quality.

[5] An enterprise architecture serves as a blueprint for systematically and completely defining an organization's current operational and technology environment and as a roadmap toward the desired state.

In addition, to help attract and retain a qualified patent examination workforce, USPTO has taken steps such as enhancing its recruiting efforts and using many of the human capital benefits available under federal personnel regulations. However, it is too soon to determine the long-term success of the agency's recruiting efforts because they have been in place only a short time and have not been consistently sustained because of budgetary constraints. Long-term uncertainty about USPTO's hiring and retention success is also due to the unknown impact of the economy. In the past, when the economy was doing well, the agency had more difficulty recruiting and retaining the staff it needed. Further, USPTO faces three long-standing challenges that could undermine its efforts to retain a qualified workforce: (1) the lack of an effective strategy to communicate and collaborate with examiners, (2) outdated assumptions in the application processing quotas it uses to reward examiners, and (3) the lack of required ongoing technical training for examiners. According to patent examiners, the lack of communication and a collaborative work environment has resulted in low morale and an atmosphere of distrust that is exacerbated by the contentious relationship between management and union officials.

Overall, USPTO has made more progress in implementing its strategic plan initiatives to increase the agency's capability than it has in implementing the initiatives to decrease patent pendency[6] and improve electronic processing. The agency has fully or partially implemented all 23 capability initiatives that focus on improving the skills of employees, enhancing quality assurance, and altering the patent system through changes in existing laws or regulations. In contrast, the agency has partially or fully implemented only 8 of the 15 initiatives aimed at reducing patent pendency and improving electronic processing. A lack of funding was cited as the primary reason for not implementing these initiatives. With the passage of legislation in December 2004 to increase fees available to USPTO for the next 2 years, the agency is reevaluating the feasibility of implementing some of these initiatives.

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[6] The time between filing for and being granted a patent historically has been referred to as "patent pendency."

In our reports, we made recommendations aimed at improving the agency's management of its patent automation strategy and related information technology investments and at enhancing communication and collaboration between management and patent examiners, and between management and union officials. USPTO generally agreed with the findings, conclusions, and recommendations in both reports, although it only partially agreed with several material aspects of our assessment of its patent automation strategy, including our recommendation that it reassess its approach to automating its patent process.

Background

USPTO helps promote industrial and technological progress in the United States and strengthen the national economy by administering the laws relating to patents and trademarks. A critical part of its mission is examining patent applications and issuing patents. A patent is a property right granted by the U.S. government to an inventor who secures, generally for 20 years from the date of initial application in the United States, his or her exclusive right to make, use, offer for sale, or sell the invention in exchange for disclosing it.[7] The number of patent filings to USPTO continues to grow and, by 2009, the agency is projecting receipt of over 450,000 patent applications annually.

Patent processing essentially involves three phases: pre-examination, examination, and post-examination. The process begins when an applicant files a patent application and pays a filing fee. During the pre-examination phase, patent office staff document receipt of the application and process the application fee, scan and convert the paper documents to electronic format, and conduct an initial review of the application and classify it by subject matter. During the subsequent examination phase, the application is assigned to a patent examiner with expertise in the subject area[8] who searches existing U.S. and foreign patents, journals, and other literature and, as necessary, contacts the applicant to resolve questions and obtain additional information to determine whether the proposed invention can be patented.[9] Examiners document their determinations on the applications in formal correspondence, referred to as office actions. Applicants may abandon their applications at any time during this process. If the examiner determines that a patent is warranted, a supervisor reviews and approves it and the applicant is informed of the outcome. The application then enters the post-examination phase and, upon payment of an "issue fee," a patent is granted and published.[10] Historically, the time from the date that a patent application is filed to the date that the patent is either granted or the application is abandoned has been called "patent pendency."

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[7] According to 35 U.S.C. §154(a)(1), a patentee may also exclude others from importing the patented invention into the United States.

[8] USPTO has eight technology centers that define its subject areas as follows: Biotechnology and Organic Chemistry; Chemical and Materials Engineering; Computer Architecture, Software, and Information Security; Communications; Semiconductors, Electrical and Optical Systems and Components; Designs for Articles of Manufacture; Transportation, Construction, Electronic Commerce, Agriculture, National Security and License and Review; Mechanical Engineering, Manufacturing, and Products.

Because of long-standing concerns about the increasing volume and complexity of patent applications, USPTO has been undertaking projects to automate its patent process for about the past two decades. In 1983, the agency began one of its most substantial projects—the Automated Patent System (APS)—with the intent of automating all aspects of the patent process. APS was to be deployed in 1990 and, when completed, consist of five integrated subsystems that would (1) fully automate incoming patent applications; (2) allow examiners to electronically search the text of granted U.S. patents and access selected abstracts of foreign patents; (3) scan and allow examiners to retrieve, display, and print images of U.S. patents; (4) help examiners classify patents; and (5) support on-demand printing of copies of patents.

In reporting on APS more than 10 years following its inception, we noted that USPTO had deployed and was operating and maintaining certain parts of the system, supporting text search, limited document imaging, order-entry and patent printing, and classification activities.[11] However, our report raised concerns about the agency's ability to adequately plan and manage this major project, pointing out that its processes for exercising effective management control over APS were weak. Ultimately, USPTO never fully developed and deployed APS to achieve the integrated, end-to-end patent processing system that it envisioned. The agency reported spending approximately $1 billion on this initiative from 1983 through 2002.[12]

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[9] A proposed invention is patentable if it is a new or useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.

[10] To keep the patent active, the patentee must pay maintenance fees at 3.5 years, 7.5 years, and 11.5 years.

[11] GAO, *Patent and Trademark Office: Key Processes for Managing Automated Patent System Development Are Weak*, GAO/AIMD-93-15 (Washington, D.C.: Sept. 30, 1993).

In addition, in 1998, the agency implemented an Internet-based electronic filing system at a reported cost of $10 million, enabling applicants to submit their applications online. Further, through 2002, the agency continued to enhance its capabilities that enabled examiners to search patent images and text, and upgraded its patent application classification and tracking systems.[13]

To help the agency address the challenges of reviewing an increased volume of more complex patent applications and of reducing the length of time it takes to process them, Congress passed a law requiring USPTO to improve patent quality, implement electronic government, and reduce pendency.[14] In response to the law, in June 2002, the agency embarked on an aggressive 5-year modernization plan outlined in its 21st Century Strategic Plan, which was updated to include stakeholder input and re-released in February 2003. The strategic plan outlines 38 initiatives related to the patent organization that focus on three crosscutting strategic themes: capability, productivity, and agility. The capability theme focuses on efforts to enhance patent quality through workforce and process improvements; the productivity theme focuses on efforts to decrease the pendency of patent applications; and the agility theme focuses on initiatives to electronically process patent applications. To fully fund the initiatives in its strategic plan, the agency requested authority from Congress to increase the user fees it collects from applicants and to spend all of these fees on patent processing.[15] Legislation enacted in December

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[12] The reported cost included system enhancements and maintenance through the end of the project's life cycle in 2002.

[13] The initial deployment of USPTO's patent tracking system occurred in 1980. This system provides workflow tracking, status reporting, and examiner production information.

[14] Patent and Trademark Office Authorization Act of 2002, Pub. L. No. 107-273, § 13104, 116 Stat. 1899, 1900.

[15] USPTO is authorized to collect fees from the public for specific activities related to processing applications. The spending of those fees is subject to provisions in annual appropriations acts at the discretion of the Congress.

2004 increased the fees available to USPTO; [16] however, the increases are only effective for fiscal years 2005 and 2006.

USPTO Continues to Pursue a Fully Automated Patent Process, but Has Not Effectively Managed its Strategy for Achieving This Capability

As was its intent with APS, USPTO has continued to pursue a paperless, end-to-end, automated patent process. In 2001, the agency initiated its Tools for Electronic Application Management (TEAM) automation project, aiming to deliver an end-to-end capability to process patent applications electronically by fiscal year 2006. Under the TEAM concept, the agency had planned to integrate its existing electronic filing system and the classification and search capabilities from the earlier APS project with new document management and workflow capabilities, and with image- and text-based processing[17] of patent applications to achieve a sophisticated means of handling documents and tracking patent applications throughout the examination process. By implementing image- and text-based capabilities, the agency had anticipated that patent examiners would be able to view and process applications online, as well as manipulate and annotate text within a patent application, thus eliminating manual functions and improving processing accuracy, reliability, and productivity, as well as the quality of the patents that are granted.

With the issuance of its 21st Century Strategic Plan, however, USPTO altered its approach to accomplishing patent automation. The strategic plan, among other things, identified the agency's high-level information technology goals for fully automating the patent process as part of the 5-year modernization effort. It incorporated automation concepts from the TEAM project, but announced an accelerated goal of delivering an operational system to electronically process patent applications by October 1, 2004, earlier than had been scheduled under TEAM.

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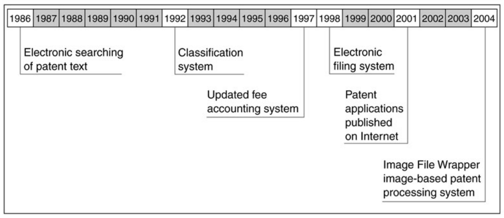
[16] Consolidated Appropriations Act, 2005, § 801, Pub. L. No. 108-447, 118 Stat. 2809, 2924 (Dec. 8, 2004).

[17] *Image-based processing* uses a graphic representation of documents produced by scanning paper documents or by converting electronic documents into images. To transform image content into text, optical character recognition (OCR) software is used to derive text from the image. OCR can convert image documents to hidden text, which is searchable. In *text-based processing*, the words and sentences in the document are retained as text and can be stored, processed, and retrieved by a document management system. Unlike image-based processing, text-based processing allows the text to be searched and extracted.

In carrying out its patent automation plans, USPTO has delivered a number of important processing capabilities through the various information systems that it has implemented. For example, an automated search capability, available since 1986, has eliminated the need for patent examiners to manually search for prior art in paper files, and the classification and fee accounting capabilities have facilitated assigning applications to the correct subject areas and managing collections of applicable fees. In addition, the electronic filing system that has existed since 1998 has enabled applicants to file their applications with the agency via the Internet. Using the Internet, patent applicants also can review the status of their applications online and the public can electronically access and search existing published patents. Further, an imaging system implemented in August 2004, called the Image File Wrapper, has given USPTO the capability to scan patent applications and related documents, which can then be stored in a database and retrieved and reviewed online. The agency's progress in implementing its automated patent functions is illustrated in figure 1.

Figure 1: USPTO's Patent Automation Progress


1986
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2004
Electronic searching of patent text
Classification system
Updated fee accounting system
Electronic filing system
Patent applications published on Internet
Image File Wrapper image-based patent processing system

Source: USPTO.

Nonetheless, even with the progress that has been made, collectively, these automated functions have not provided the fully integrated, electronic patent processing capability articulated in the agency's automation plans. Two of the key systems that it is relying on to further enhance its capabilities—the electronic filing system and the Image File Wrapper—have not yielded the processing improvements that the agency has deemed essential to successfully operate in a fully integrated, electronic environment.

Specifically, in implementing its electronic filing system, USPTO had projected significant increases in processing efficiencies and quality by providing patent applicants the capability to file online, thus alleviating the need for them to send paper applications to the agency or for patent office staff to manually key application data into the various processing systems. However, even after enhancements in 2002 and 2004, the system did not produce the level of usage among patent filers that the agency had anticipated. For example, although USPTO's preliminary justification for acquiring the electronic filing system had projected an estimated usage rate of 30 percent in fiscal year 2004, patent officials reported that, as of April 2005, fewer than 2 percent of all patent applications were being submitted to the agency via this system. As a result, anticipated processing efficiencies and quality improvements through eliminating the manual re-keying of application data have not been realized.

In September 2004, USPTO convened a forum of senior officials representing the largest U.S. corporate and patent law firm filers to identify causes of patent applicants' dissatisfaction with the electronic filing system and determine how to increase the number of patents being filed electronically. According to the report resulting from this forum, the majority of participants viewed the system as cumbersome, time-consuming, costly, inherently risky, and lacking a business case to justify its usage. Among the barriers to system usage that the participants specifically identified were (1) users' lack of a perceived benefit from filing applications electronically, (2) liability concerns associated with filers' unsuccessful use of the system or unsuccessful transmission of patent applications to USPTO, and (3) significant disruptions to filers' normal office/corporate processes and workflow caused by factors such as difficulty in using the automated tools and the inability to download necessary software through firewalls.

Several concerns raised during the forum mirrored those that USPTO had earlier identified in a 1997 analysis of a prototype for electronic filing. However, at the time of our review, the agency had not completed plans to show how it would address the concerns regarding use of the electronic filing system.

The agency's Image File Wrapper also had not resulted in critical patent processing improvements. The system includes image technology for storage and maintenance of records associated with patent applications and provides the capability to scan each page of a submitted paper application and convert the pages into electronic images. Patent examiners in a majority of the focus groups that we conducted commented that the system had provided them with the ability to easily access patent applications and related information. In addition, patent officials stated that the system had enabled multiple users to simultaneously access patent applications.

Nonetheless, patent officials acknowledged that the system had experienced performance and usability problems. Specifically, in speaking about the system's performance, the officials and agency documentation stated that, after its implementation, the Image File Wrapper had been unavailable for extended periods of time or had experienced slow response times, resulting in decreased productivity. To lessen the impact of this problem, patent officials said they had developed a backup tool to store images of an examiner's most recent applications, which can be accessed when the Image File Wrapper is not available. Further, in commenting on this matter, the USPTO director stated that the system's performance had begun to show improvement.

Regarding the usability of the system, patent officials and focus group results indicated that the Image File Wrapper did not fully meet processing needs. For example, the officials stated that, as an image-based system, the Image File Wrapper did not fully enable patent examiners to electronically search, manipulate, or track and log changes to application text, which were key processing features emphasized in the agency's automation plans. The examiners also commented that a limited capability to convert images to text, which was intended to assist them in copying and reusing information contained in patent files, was error-prone, contributing to their need to download and print the applications for review. Further, because the office's legacy systems were not integrated with the Image File Wrapper, examiners were required to manually print correspondence from these systems, which then had to be scanned into the Image File Wrapper in order to be included as part of an applicant's electronic file.

Patent and Office of Chief Information Officer (OCIO) officials largely attributed the system's performance and usability problems to the agency's use of software that it acquired from the European Patent Office. The officials explained that, to meet the accelerated date for delivering an operational system as outlined in its strategic plan, the agency had decided in 2002 to acquire and use a document-imaging system owned by the European Patent Office, called ePhoenix, rather than develop the integrated patent processing system that had been described in its automation plans.[18] According to the officials, the director, at that time, had considered ePhoenix to be the most appropriate solution for further implementing USPTO's electronic patent processing capabilities given (1) pressures from Congress and from customers and stakeholders to implement an electronic patent processing system more quickly than originally planned and (2) the agency's impending move to its new facility in Alexandria, Virginia, which did not include provisions for transferring and storing paper patent applications.[19]

However, they indicated that the original design of the ePhoenix system had not been compatible with USPTO's technical platform for electronic patent processing. Specifically, they stated that the European Patent Office had designed the system to support only the printing of files for subsequent manual reviews, rather than for electronic review and processing. In addition, they stated that the system had not been designed for integration with other legacy systems or to incorporate additional capabilities, such as text processing, with the existing imaging capability. Further, an official of the European Patent Office noted that ePhoenix had supported their office's much smaller volume of patent applications.[20] Thus, with USPTO's patent application workload being approximately twice as large as that of its European counterpart, the agency placed greater stress on the system than it was originally designed to accommodate. OCIO officials told us that, although they had tested certain aspects of the system's capability, many of the problems encountered in using the system were not revealed until after the system was deployed and operational.

Patent and OCIO officials acknowledged that the agency had purchased ePhoenix although senior officials were aware that the original design of the system had not been compatible with USPTO's technological platform for electronic patent processing. They stated that, despite knowing about the problems and risks associated with using the software, the agency had nonetheless proceeded with this initiative because senior officials, including the former USPTO director, had stressed their preference for using ePhoenix in order to expedite the implementation of a system. Patent and OCIO officials acknowledged that management judgment, rather than a rigorous analysis of costs, benefits, and alternatives, had driven the agency's decision to use this system.

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[18] In November 2002, patent officials entered into an agreement with the European Patent Office, in which that office agreed to provide USPTO with a license to use its patent processing software and to provide technical assistance in customizing the software to meet USPTO's needs. USPTO completed its implementation of the system in August 2004, at a reported total cost of approximately $14 million.

[19] In December 2003, USPTO began relocating its headquarters from Arlington (Crystal City), Virginia, to Alexandria, Virginia, with the intent of consolidating all of its major operations in a central facility. The agency completed this move in July 2005.

[20] Over the past 2 years, the European Patent Office reported processing about 160,000 to 170,000 patents per year using ePhoenix.

To a significant extent, USPTO's difficulty in realizing intended improvements through its electronic filing system and Image File Wrapper can be attributed to the fact that the agency took an ad hoc approach to planning and managing its implementation of these systems, driven in part by its accelerated schedule for implementing an automated patent processing capability. The Clinger-Cohen Act of 1996,[21] as well as information technology best practices and our prior reviews, emphasize the need for agencies to undertake information technology projects based on well-established business cases that articulate agreed-upon business and technical requirements; effectively analyze project alternatives, costs, and benefits; include measures for tracking projects through their life cycle against cost, schedule, benefit, and performance targets; and ultimately, provide the basis for credible and informed decision making and project management. Yet, patent officials did not rely on established business cases to guide their implementation of these key automation initiatives.

The absence of sound project planning and management for these initiatives has left the agency without critical capabilities, such as text processing, and consequently, has impeded its successful transition to an integrated and paperless patent processing environment. The Under Secretary of Commerce for Intellectual Property, who serves as the director of USPTO, stated at the conclusion of our review that he recognized and intended to implement measures to address the weaknesses in the agency's planning and management of its automated patent systems.

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[21] 40 U.S.C. §11312.

USPTO Lacks Essential Information Technology Investment Management Processes to Support Its Patent Automation

USPTO's ineffective planning for and management of its patent automation projects, in large measure, can be attributed to enterprise-level, systemic weaknesses in the agency's information technology investment management processes. A key requirement of the Clinger-Cohen Act is that agencies have established processes, such as capital planning and investment control, to help ensure that information technology projects are implemented at acceptable costs and within reasonable and expected time frames, and contribute to tangible, observable improvements in mission performance. Such processes guide the selection, management, and evaluation of information technology investments by aiding management in considering whether to undertake a particular investment in information systems and providing a means to obtain necessary information regarding the progress of an investment in terms of cost, capability of the system to meet specified requirements, timeliness, and quality.

Further, our Enterprise Architecture Framework[22] emphasizes that information technology projects should show evidence of compliance with the organization's enterprise architecture, which serves as a blueprint for systematically and completely defining an organization's current (baseline) operational and technology environment and as a roadmap toward the desired (target) state. Effective implementation of an enterprise architecture can facilitate an agency by informing, guiding, and constraining the decisions being made for the agency, and subsequently decrease the risk of buying and building systems that are duplicative, incompatible, and unnecessarily costly to maintain and interface.

At the time of our study, USPTO had begun instituting certain essential information technology investment management mechanisms, such as a framework for its enterprise architecture and components of a capital planning and investment control process. However, it had not yet established the necessary linkages between its enterprise architecture and its capital planning and investment control process to ensure that its automation projects would comply with the architecture or fully instituted enforcement mechanisms for investment management. For example, USPTO drafted a capital planning and investment control guide in June 2004 and issued an agency administrative order on its integrated investment decision practices in February 2005. However, according to senior officials, many of the processes and procedures in the guide had not been completed and fully implemented and it was unclear how the agency administrative order was being applied to investments.

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[22] For more information, see GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management* (Version 1.1), GAO-03-584G (Washington, D.C.: April 2003).

In addition, while the agency had completed the framework for its enterprise architecture, it had not aligned its business processes and information technology in accordance with the architecture. According to OCIO officials, the architecture review board responsible for enforcing compliance with the architecture was not yet in place; thus, current architecture reviews were of an advisory nature and were not required for system implementation. Our analysis of architecture review documents that system officials provided for the electronic filing system and the Image File Wrapper confirmed that the agency had not rigorously assessed either of these systems' compliance with the enterprise architecture. Adding to these conditions, a study commissioned by the agency in 2004 found that its Office of Chief Information Officer was not organized to help the agency accomplish the goals in its automation strategy and that its investment management processes did not ensure appropriate reviews of automation initiatives.

USPTO has an explicit responsibility to ensure that the automation initiatives that it is counting on to enhance its overall patent process are consistent with the agency's priorities and needs and are supported by the necessary planning and management to successfully accomplish this. At the conclusion of our review, the agency's director and its chief information officer acknowledged the need to strengthen the agency's investment management processes and practices and to effectively apply them to USPTO's patent automation initiatives.

USPTO Has Taken Steps to Help Attract and Retain a Qualified Patent Examiner Workforce, but Long-Term Success Is Uncertain

Since 2000, USPTO has also taken steps intended to help attract and retain a qualified patent examination workforce. The agency has enhanced its recruiting efforts and has used many human capital flexibilities to attract and retain qualified patent examiners. However, during the past 5 years, its recruiting efforts and use of benefits have not been consistently sustained, and officials and examiners at all levels in the agency told us that the economy has more of an impact on their ability to attract and retain examiners than any actions taken by the agency. Consequently, how USPTO's actions will affect its long-term ability to maintain a highly qualified workforce is unclear. While the agency has been able to meet its hiring goals, attrition has recently increased.

USPTO's recent recruiting efforts have incorporated several measures that we and others identified as necessary to attract a qualified workforce.[23] First, in 2003, to help select qualified applicants, the agency identified the knowledge, skills, and abilities that examiners need to effectively fulfill their responsibilities. Second, in 2004, its permanent recruiting team, composed of senior and line managers,[24] participated in various recruiting events, such as job fairs, conferences sponsored by professional societies, and visits to the 10 schools that the agency targeted based on the diversity of their student population and the strength of their engineering and science programs.[25] Finally, for 2005, USPTO developed a formal recruiting plan that, among other things, identified hiring goals for each technology center and described the agency's efforts to establish ongoing partnerships with the 10 target schools. In addition, the agency trained its recruiters in effective interviewing techniques to help them better describe the production system and incorporated references to the production-oriented work environment in its recruitment literature.

USPTO has also used many of the human capital benefits available under federal personnel regulations to attract and retain qualified patent examiners. Among other benefits, it has offered

- recruitment bonuses ranging from $600 to over $10,000;
- a special pay rate for patent examiners that is 10 percent above federal salaries for comparable jobs;
- non-competitive promotion to the full performance level; and
- flexible working schedules, including the ability to schedule hours off during midday.

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[23] See GAO, *Human Capital: A Self-Assessment Checklist for Agency Leaders*, GAO/OCG-00-14G, version 1 (Washington, D.C.: September 2000); and Office of Personnel Management, *Human Capital Assessment Accountability Framework*, (Washington, D.C., Sept. 20, 2000).

[24] USPTO's permanent recruiting team was established in 2002. However, the agency suspended recruiting efforts in 2002 and 2003 in the face of budgetary uncertainty.

[25] The 10 target schools selected were Florida International University, North Carolina Agricultural and Technical State University, North Carolina State University, University of Florida, University of Maryland, University of Pennsylvania, University of Puerto Rico-Mayaguez, University of Virginia, University of Wisconsin-Madison, and Virginia Polytechnic and State University.

According to many of the supervisors and examiners who participated in our focus groups, these benefits were a key reason they were attracted to the agency and are a reason they continue to stay. The benefits that examiners most frequently cited as important were the flexible working schedules and competitive salaries.

However, it is too soon to determine the long-term effect of the agency's efforts, in part because neither its recruiting efforts nor the human capital benefits have been consistently sustained due to budgetary constraints. For example, in 2002 the agency suspended reimbursements to examiners for law school tuition because of funding limitations, although it resumed the reimbursements in 2004 when funding became available. Examiners in our focus groups expressed dissatisfaction with the inconsistent availability of these benefits, in some cases saying that the suspension of benefits, such as law school tuition reimbursement, provided them an incentive to leave the agency. More recently, in March 2005, USPTO proposed to eliminate or modify other benefits, such as the ability of examiners to earn credit hours and to set their own work schedules.

Another, and possibly the most important, factor adding to the uncertainty of USPTO's recruiting efforts is the unknown potential impact of the economy, which, according to agency officials and examiners, has a greater effect on recruitment and retention than any actions the agency may take. Both agency officials and examiners told us that when the economy picks up, more examiners tend to leave the agency and fewer qualified candidates are attracted to it. On the other hand, when there is a downturn in the economy, the agency's ability to attract and retain qualified examiners increases because of perceived job security and competitive pay. When discussing their reasons for joining USPTO, many examiners in our focus groups cited job security and the lack of other employment opportunities, making comments such as, "I had been laid off from my prior job, and this was the only job offer I got at the time." This relationship between the economy and USPTO's hiring and retention success is part of the reason why the agency has met its hiring goals for the last several years. However, the agency has recently experienced a rise in attrition rates. In particular, a high level of attrition among younger, less experienced examiners could affect its efforts to maintain a highly qualified patent examination workforce. Attrition of examiners with 3 years or less experience is a significant loss for the agency because considerable time and dollar resources are invested to help new examiners become proficient during their first few years.

USPTO Faces Long-Standing Human Capital Challenges that Could Undermine Its Recruiting and Retention Efforts

While USPTO has undertaken a number of important and necessary actions to attract and retain qualified patent examiners, it continues to face three long-standing human capital challenges which, if not addressed, could also undermine its recent efforts. First, although organizations with effective human capital models have strategies to communicate with employees and involve them in decision making, the lack of good communication and collaboration has been a long-standing problem at USPTO. We found that the agency does not have a formal communication strategy and does not actively seek input from examiners on key management decisions. Most of the emphasis is on enhanced communication among managers but not between managers and other levels of the organization, such as patent examiners. Patent examiners and supervisory patent examiners in our focus groups frequently stated that communication with agency management was poor and that managers provided them with inadequate or no information, creating an atmosphere of distrust of management. The examiners also said that management was out of touch with them and their concerns and that communication with the managers tended to be one way and hierarchical, with little opportunity for feedback. Management officials told us that informal feedback can always be provided by anyone in the organization—for example, through an e-mail to anyone in management.

The lack of communication between management and examiners is exacerbated by the contentious working relationship between management and union officials and by the complexity of the rules about what level of communication can occur between managers and examiners without involving the union.[26] Some managers alluded to this contentious relationship as one of the reasons why they had limited communication with patent examiners, who are represented by the union even if they decide not to join it. Specifically, they believed they could not solicit the input of employees directly without engaging the union. Another official, however, told us that nothing prevents the agency from having "town hall" type meetings to discuss potential changes in policies and procedures, as long as the agency does not promise examiners a benefit that impacts their working conditions. Union officials agreed that USPTO can invite comments from examiners on a plan or proposal; however, if the proposal concerns a negotiating issue, the agency must consult the examiners' union, which is their exclusive representative with regard to working conditions.

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[26] Patent examiners are represented by, but not required to join, the Patent Office Professional Association (POPA), an independent union of professional employees formed in 1964.

Second, human capital models suggest that agencies should periodically assess their monetary awards systems to ensure that they help attract and retain qualified staff. However, patent examiners' awards are based largely on the number of applications they process, and the assumptions on which application processing quotas are based have not been updated since 1976. Patent examiners and management have differing opinions on whether these assumptions need to be updated. Examiners in our focus groups told us that, in the last several decades, the tasks associated with and the complexity of processing applications have greatly increased while the time allowed has not. As a result, many of the examiners and supervisory patent examiners in our focus groups and respondents to previous agency surveys reported that examiners do not have enough time to conduct high-quality reviews of patent applications. The examiners noted that these inadequate time frames create a stressful work environment and are cited in the agency's exit surveys as a primary reason that examiners leave the agency. In contrast, USPTO managers had a different perspective on the production model and its impact on examiners. They stated that the time estimates used in establishing production quotas do not need to be adjusted because the efficiencies gained through actions such as the greater use of technology have offset the time needed to address the greater complexity of the applications and the increase in the number of claims. Moreover, they said that for an individual examiner, reviews of applications that take more time than the estimated average are generally offset by other reviews that take less time.

Finally, counter to current workforce models, USPTO does not require ongoing technical education for patent examiners, which could negatively affect the quality of its patent examination workforce. Instead, the agency requires newly hired examiners to take extensive training only during their first year of employment; all subsequent required training is focused on developing legal expertise. Almost all patent examiners are required to take a range of ongoing training in legal matters, including patent law. In contrast, patent examiners are not required to undertake any ongoing training to maintain expertise in their area of technology, even though the agency acknowledges that such training is important, especially for electrical and electronic engineers. In 2001 the agency stated, "Engineers who fail to keep up with the rapid changes in technology, regardless of degree, risk technological obsolescence." However, agency officials told us that examiners automatically maintain currency with their technical fields by just doing their job. Patent examiners and supervisory patent examiners disagreed, stating that the literature they review in applications is outdated, particularly in rapidly evolving technologies. The agency does offer some voluntary in-house training, such as technology fairs and industry days at which scientists and others are invited to present lectures to patent examiners that will help keep them current on the technical aspects of their work. In addition, the agency offers voluntary external training and, for a small number of examiners, pays conference or workshop registration fees. Agency officials could provide no data on the extent to which examiners have taken advantage of such training opportunities.

USPTO Has Made Greater Progress on Strategic Plan Initiatives that Enhance the Agency's Capability Rather than Productivity and Agility

In carrying out its strategic plan to become a more productive and responsive organization, our work found that USPTO has made greater progress in implementing its initiatives to make the patent organization more capable by improving the quality of examiners' skills and work processes than it has in implementing its productivity and agility initiatives aimed at decreasing the length of time to process a patent application and improving electronic processing. Specifically, of the activities planned for completion by December 2004, the agency has fully or partially implemented all 23 of the initiatives related to its capability theme to improve the skills of employees, enhance quality assurance, and alter the patent process through legislative and rule changes. In contrast, it has partially implemented only 1 of the 4 initiatives related to the productivity theme to restructure fees and expand examination options for patent applicants and has fully or partially implemented 7 of the 11 initiatives related to the agility theme to increase electronic processing of patent applications and to reduce examiners' responsibilities for literature searches. Table 1 provides our assessment of each of the strategic plan initiatives.

Table 1: Status of Strategic Plan Initiatives to Improve Workforce Skills

Capability initiatives to improve workforce skills	Implemented	Partially implemented	Not implemented
Increase the pool of qualified management candidates by adding awards to total compensation	•		
Explore alternate organizational structures for the workplace	•		
Develop interim pre-employment measures to assess English language skills	•		
Recertify the skills of examiners with authority to issue patents (primary examiners) through examinations and expanded work product reviews	•		
Certify that examiners possess the requisite knowledge, skills, and abilities prior to promotion to a position with authority to negotiate on behalf of USPTO	•		
Improve the selection and training of supervisory patent examiners		•	
Use examinations and other means to ensure that new patent examiners possess the requisite skills prior to promotion		•	
Implement a pre-employment test to assess English language skills		•	
Create an Enterprise Training Division		•	
Capability initiatives to enhance quality assurance			
Expand current quality assurance program to include works in progress (in-process reviews)	•		
Establish "second pair of eyes" reviews in each technology center	•		
Survey customer regarding transactions with USPTO on specific applications to supplement comprehensive customer surveys	•		
Evaluate the quality of examiners' literature searches		•	
Enhance the reviewable record for each patent application with additional information from the applicant and examiner		•	
Capability initiatives to change legislation and rules			
Delete the requirement for physical surrender of the original patent papers	•		
Certify the legal knowledge of patent attorneys and agents who wish to practice before USPTO and periodically recertify the skills of practicing attorneys and agents		•	
Evaluate whether to adopt a unity of invention standard		•	
Simplify adjustments to the patent term		•	
Permit individuals who have been assigned patent rights to sign an oath declaring that the inventor is the original and first inventor		•	
Permit individuals who have been assigned patent rights to broaden the claims in an application		•	
Correct an inconsistency regarding unintentionally delayed submission of certain claims		•	
Eliminate certain exemptions from the requirement to publish most patent applications within 18 months of when they were first filed		•	

Amend current legislation regarding certain limitations on an inventor's right to obtain a patent		•	
Productivity initiatives			
Restructure fees and provide for refunds		•	
Offer patent applicants a choice of up to 5 examination options based in part on the ability to rely on searches conducted by others			•
Offer patent applicants the option of an accelerated examination			•
Revise postgrant review procedures to allow greater public input			•
Agility initiatives			
Establish an information security program	•		
Transition to electronic patent processing		•	
Transition to electronic processing for postgrant reviews		•	
Ensure availability of critical data in the event of a catastrophic systems failure		•	
Promote international harmonization and pursue goals to strengthen international intellectual property rights of U.S. inventors		•	
Pursue international agreements to share patent search results		•	
Accelerate Patent Cooperation Treaty reforms		•	
Rely on other sources to classify patent documents			•
Rely on other sources to support domestic and international literature searches			•
Rely on other sources to transition to a new global patent classification system			•
Develop stringent conflict of interest clauses for search firms			•

Source: GAO analysis of USPTO data.

Agency officials primarily cited the need for additional funding as the main reason that some initiatives have not been implemented. With passage of the legislation in December 2004 to restructure and increase the fees available to USPTO, the agency is reevaluating the feasibility of many initiatives that it had deferred or suspended.

In summary, through its attempts to implement an integrated, paperless patent process over the past two decades, USPTO has delivered a number of important automated capabilities. Nonetheless, after spending over a billion dollars on its efforts, the agency is still not yet effectively positioned to process patent applications in a fully automated environment. Moreover, when and how it will actually achieve this capability is uncertain. Largely as a result of ineffective planning and management of its automated capabilities, system performance and usability problems have limited the effectiveness of key systems that the agency has implemented to support critical patent processes. Although

USPTO's director and its chief information officer have recognized the need to improve the agency's planning and management of its automation initiatives, weaknesses in key information technology management processes needed to guide the agency's investments in patent automation, such as incomplete capital planning and investment controls, could preclude their ability to successfully accomplish this. Thus, the agency risks further implementing information technology that does not support its needs and that threatens its overall goal of achieving a fully electronic capability to process its growing patent application workload.

Further, to improve its ability to attract and retain the highly educated and qualified patent examiners it needs, USPTO has taken steps recognized by experts as characteristic of highly effective organizations. However, without an effective communication strategy and a collaborative culture that includes all layers of the organization, the agency's efforts could be undermined. The absence of effective communication and collaboration has created distrust and a significant divide between management and examiners on important issues such as the appropriateness of the production model and the need for technical training. Unless the agency begins to develop an open, transparent, and collaborative work environment, its efforts to hire and retain examiners may be adversely affected in the long run. Overall, while USPTO has progressed in implementing strategic plan initiatives aimed at improving its organizational capability, the agency attributes its limited implementation of other initiatives intended to reduce pendency and improve electronic patent application processing primarily to the need for additional funding.

Given the weaknesses in USPTO's information technology investment management processes, we recommended that the agency, before proceeding with any new patent automation initiatives, (1) reassess and, where necessary, revise its approach for implementing and achieving effective use of information systems supporting a fully automated patent process; (2) establish disciplined processes for planning and managing the development of patent systems based on well-established business cases; and (3) fully institute and enforce information technology investment management processes and practices to ensure that its automation initiatives support the agency's mission and are aligned with its enterprise architecture. Further, in light of its need for a more transparent and collaborative work environment, we recommended that the agency develop formal strategies to (1) improve communication between management and patent examiners and between management and union officials and (2) foster greater collaboration among all levels of the organization to resolve key issues, such as the assumptions underlying the quota system and the need for required technical training.

USPTO generally agreed with our findings, conclusions, and recommendations regarding its patent automation initiatives and acknowledged the need for improvements in its management processes by, for example, developing architectural linkages to the planning process and implementing a capital planning and investment control guide. Nonetheless, the agency stated that it only partially agreed with several material aspects of our assessment, including our recommendation that it reassess its approach to automating its patent process. Further, the agency generally agreed with our findings, conclusions, and recommendations regarding its workforce collaboration and suggested that it would develop a communication plan and labor management strategy, and educate and inform employees about progress on initiatives, successes, and lessons learned. In addition, USPTO indicated that it would develop a more formalized technical program for patent examiners to ensure that their skills are fresh and ready to address state-of-the-art technology.

Mr. Chairman, this concludes our statement. We would be pleased to respond to any questions that you or other Members of the Committee may have at this time.

Contacts and Acknowledgments

For further information, please contact Anu K. Mittal at (202) 512-3841or Linda D. Koontz at (202) 512-6240. They can also be reached by e-mail at mittala@gao.gov and koontzl@gao.gov, respectively. Other individuals making significant contributions to this testimony were Valerie C. Melvin, Assistant Director; Cheryl Williams, Assistant Director; Mary J. Dorsey, Vijay D'Souza, Nancy Glover, Vondalee R. Hunt, and Alison D. O'Neill.

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United States Government Accountability Office

GAO

Report to Congressional Committees

June 2005

INTELLECTUAL PROPERTY

USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain

GAO

Accountability ★ Integrity ★ Reliability

GAO-05-720

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Highlights

Highlights of GAO-05-720, a report to congressional committees

June 2005

INTELLECTUAL PROPERTY

USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain

Why GAO Did This Study

The U.S. Patent and Trademark Office (USPTO) is responsible for issuing U.S. patents that protect new ideas and investments in innovation and creativity. Recent increases in both the complexity and volume of patent applications have increased the time it takes to process patents and have raised concerns about the validity of the patents USPTO issues. Adding to these challenges is the difficulty that USPTO has had attracting and retaining qualified staff. In this context, GAO was asked to obtain information about USPTO's patent organization. Specifically GAO reviewed (1) overall progress in implementing the initiatives in its strategic plan; (2) efforts to attract and retain a qualified patent workforce; and (3) remaining challenges, if any, in attracting and retaining a qualified patent workforce.

What GAO Recommends

GAO recommends that USPTO develop formal strategies to improve communication and collaboration between management, patent examiners, and the union to help to address the issues identified in this report. USPTO agreed with our recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-05-720.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Anu K. Mittal at (202) 512-3841 or mittala@gao.gov.

What GAO Found

USPTO has made more progress in implementing its strategic plan initiatives to increase the agency's capability than initiatives aimed at decreasing patent pendency. USPTO has fully or partially implemented all 23 capability initiatives that focus on improving the skills of employees, enhancing quality assurance, and altering the patent system through changes in existing laws or regulations. In contrast, the agency has partially or fully implemented only 8 of the 15 initiatives aimed at reducing pendency. Lack of funding was cited as the primary reason for not implementing these initiatives. With passage of legislation in December 2004 to increase fees available to USPTO for the next two years, the agency is re-evaluating the feasibility of implementing some of these initiatives.

Since 2000, USPTO has taken steps intended to help attract and retain a qualified patent examination workforce, such as enhancing its recruiting efforts and using many of the human capital benefits available under federal personnel regulations. However, it is too soon to determine the long-term success of the agency's recruiting efforts because they have been in place only a short time and have not been consistently sustained due to budgetary constraints. Long-term uncertainty about USPTO's hiring and retention success is also due to the unknown impact of the economy. In the past, when the economy was doing well, the agency had more difficulty in recruiting and retaining the staff it needed.

USPTO faces three long-standing challenges that could also undermine its efforts to retain a qualified workforce: the lack of an effective strategy to communicate and collaborate with examiners; outdated assumptions in the production quotas it uses to reward examiners; and the lack of required ongoing technical training for examiners. According to patent examiners, the lack of communication and a collaborative work environment has resulted in low morale and an atmosphere of distrust that is exacerbated by the contentious relationship between management and union officials. Also, managers and examiners have differing opinions on the need to update the monetary award system that is based on assumptions that were established in 1976. As a result, examiners told us they have to contend with a highly stressful work environment and work voluntary overtime to meet their assigned quotas. Similarly, managers and examiners disagree on the need for required ongoing technical training. Examiners said they need this training to keep current in their technical fields, while managers believe that reviewing patent applications is the best way for examiners to remain current.

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Abbreviations

EPO	European Patent Office
OIG	Office of Inspector General
OMB	Office of Management and Budget
OPM	Office of Personnel Management
OPQA	Office of Patent Quality Assurance
PCT	Patent Cooperation Treaty
POPA	Patent Office Professional Association
USPTO	U.S. Patent and Trademark Office

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June 17, 2005

The Honorable F. James Sensenbrenner Jr.
Chairman
Committee on the Judiciary
House of Representatives

The Honorable Frank R. Wolf
Chairman
Subcommittee on Science, the Departments
of State, Justice, and Commerce, and
Related Agencies
Committee on Appropriations
House of Representatives

The U.S. Patent and Trademark Office (USPTO) is responsible for issuing U.S. patents that protect new ideas and investments in innovation and creativity.[1] However, recent increases in both the complexity and volume of patent applications have lengthened the time it takes USPTO to process patents ("pendency") and have raised concerns among intellectual property organizations, patent holders, and others about the quality of the patents that are issued. Over the last 10 years, the number of patent applications filed annually with USPTO has increased 91 percent from about 185,000 in 1994 to over 350,000 in 2004. USPTO's resources have not kept pace with the rising number and complexity of patent applications it must review. Moreover, at times, USPTO officials acknowledge they have had difficulty competing with the private sector to attract and retain staff with the high degree of scientific, technical, and legal knowledge required to be patent examiners. To help the agency address these challenges, Congress passed a law requiring USPTO to improve patent quality, implement electronic government,[2] and reduce pendency.[3]

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[1] USPTO, an agency within the Department of Commerce, consists of two organizations, one for patents and one for trademarks. This report focuses on the patent organization, which accounts for about 76 percent of the agency's resources.

[2] Electronic government refers to an increased reliance on information technology to conduct government operations and accomplish agency missions.

[3] Patent and Trademark Office Authorization Act of 2002, Pub. L. No. 107-273, § 13101, 116 Stat. 1899, 1900, required USPTO to develop a 5-year strategic plan for meeting these three requirements.

In response to the law, USPTO in June 2002 embarked on an aggressive 5-year modernization plan outlined in its 21st Century Strategic Plan (Strategic Plan), which was updated to include stakeholder input and rereleased in February 2003.[4] USPTO's Strategic Plan includes 38 initiatives related to the patent organization that focus on three crosscutting strategic themes: capability, productivity, and agility. The capability theme includes efforts to enhance patent quality through workforce and process improvements; the productivity theme includes efforts to decrease pendency of patent applications; and the agility theme includes initiatives to electronically process patent applications. To fully fund the initiatives in its Strategic Plan, the agency requested authority from Congress to increase the user fees it collects from applicants and to spend all of these fees on patent processing.[5] Legislation to increase the fees was enacted in December 2004;[6] however, the changes will be effective only in fiscal years 2005 and 2006. Although USPTO's Strategic Plan includes some initiatives to improve the skills of its examination workforce, the agency's more detailed summary of its actions to attract and retain a qualified workforce is contained in the Strategic Workforce Restructuring Plan (Workforce Plan), which the agency developed in 2001.

In the context of the various efforts being undertaken by USPTO, you requested that we obtain information about its (1) overall progress in implementing the initiatives in the 21st Century Strategic Plan related to the patent organization; (2) efforts to attract and retain a qualified patent workforce; and (3) remaining challenges, if any, in attracting and retaining a qualified patent workforce.

To determine USPTO's progress toward implementing the Strategic Plan initiatives for the patent organization, we reviewed the initiatives contained in the plan, as well as agency documents regarding USPTO's progress in implementing each initiative. We also interviewed key USPTO officials and union officials about the plan's implementation.[7] We focused our review on tasks that were to have been completed by December 2004. To determine what actions USPTO has taken to attract and retain a qualified patent workforce and what challenges, if any, the agency faces in this area, we reviewed USPTO's Workforce Plan and other policies and practices related to human capital. We interviewed USPTO management and union officials, as well as officials from the Department of Commerce, its Office of Inspector General (OIG), and the Office of Personnel Management (OPM) about human capital initiatives undertaken by USPTO. We also reviewed results from USPTO and OPM employee surveys and compared human capital policies and practices with those recommended by GAO, OPM, and others. In addition, we attended a USPTO career fair for patent examiners to observe agency recruiting efforts and conducted focus groups with patent examiners and supervisory patent examiners to obtain their views on various issues related to USPTO's ability to attract and retain a qualified patent examination workforce. Our review focused exclusively on the activities of the patent organization and not those of the trademark organization. We are issuing a separate report addressing the agency's strategy for automating its patent process.[8] Appendix I contains a detailed discussion of the scope and methodology for our review. We conducted our review from June 2004 through April 2005 in accordance with generally accepted government auditing standards.

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[4] USPTO also prepared the Strategic Plan as part of the requirements of the Government Performance and Results Act.

[5] USPTO is funded by fees collected from the public for specific activities related to processing applications. The spending of those fees is subject to provisions in annual appropriations acts.

[6] Consolidated Appropriations Act, 2005, § 801, Pub. L. No. 108-447, 118 Stat. 2809, 2924 (Dec. 8, 2004).

Results in Brief

USPTO has made greater progress in implementing its Strategic Plan's initiatives to improve the patent organization's capability than it has in implementing initiatives to improve its productivity and agility. Specifically, of the actions planned to have been implemented by December 2004, USPTO has fully or partially implemented all 23 of the initiatives related to its capability theme, which focuses on improving the skills of employees, enhancing quality assurance, and altering the patent system through changes in existing laws or regulations. For example, USPTO established programs to periodically test the skills of patent examiners, and revised and expanded reviews to ensure the quality of examiners' work. In contrast, the agency has partially implemented only 1 of the 4 initiatives related to the productivity theme to help reduce pendency, and has fully implemented only 1 and partially implemented 6 of the 11 initiatives related to the agility theme to help improve electronic processing of patent applications. Agency officials primarily cited the need for additional funding as the reason for not implementing these initiatives. With passage of the legislation in December 2004 to increase fees available to USPTO, the agency is re-evaluating the feasibility of implementing those initiatives that it had previously deferred or suspended.

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[7] Patent examiners are represented by, but not required to join, the Patent Office Professional Association (POPA), an independent union of professional employees formed in 1964.

[8] GAO, *Intellectual Property: Key Processes for Managing Patent Automation Strategy Need Strengthening*, GAO-05-336 (Washington, D.C.: June 17, 2005).

Since 2000, USPTO has taken steps intended to help attract and retain a qualified patent examination workforce. Specifically, the agency enhanced its recruiting efforts by, among other things, identifying the knowledge, skills, and abilities that patent examiners need to effectively fulfill their responsibilities and establishing a permanent recruiting team composed of senior and line managers. In addition, USPTO has used many of the human capital benefits available under federal personnel regulations to attract and retain qualified examiners, including the two benefits most frequently cited as important by examiners: flexible working schedules and competitive salaries. However, it is too soon to determine the long-term success of the agency's efforts, in part because neither recruiting efforts nor availability of benefits have been consistently sustained during the limited time they have been in effect. In 2002, for example, USPTO suspended reimbursements to examiners for law school tuition, in part because of funding limitations, although the agency resumed reimbursement in 2004 when funding from the fee legislation became available. Examiners in our focus groups expressed dissatisfaction with the inconsistent availability of these benefits, in some cases saying that suspension of benefits provides them with an incentive to leave the agency. Another reason adding to the uncertainty of USPTO's recruiting efforts is the impact of the economy, which, according to agency officials and examiners, has a greater effect on recruitment and retention than any actions the agency may take. Both agency officials and examiners told us that when the economy picks up, more examiners tend to leave USPTO and fewer qualified candidates are attracted to the agency. On the other hand, when there is a downturn in the economy, USPTO's ability to attract and retain qualified examiners increases because of perceived job security and competitive pay. This correspondence between the economy and USPTO's hiring and retention success is part of the reason why USPTO has been able to meet its hiring goals for the last several years, but recently has experienced a rise in attrition rates.

While USPTO has undertaken a number of important and necessary actions to attract and retain qualified patent examiners, the agency continues to face three long-standing human capital challenges that could also undermine its recent efforts if not addressed.

- First, the agency lacks effective mechanisms for helping managers to communicate and collaborate with examiners. Organizations with effective human capital models have strategies to communicate with employees and involve them in decision making; however, USPTO officials acknowledged that they do not have a formal communication strategy or actively seek input from examiners on management decisions. Most of USPTO's communication mechanisms emphasize communication between managers and not between managers and examiners. Patent examiners and supervisory patent examiners in our focus groups frequently said that communication with management was poor or nonexistent, and they reported little involvement in providing input to key agency decisions. Prior employee surveys and participants in our focus groups indicated that the lack of communication and involvement has created an atmosphere of distrust of USPTO management and lowered examiner morale, which is further exacerbated by the contentious relationship between USPTO management and the examiners' union.

- Second, human capital models suggest that agencies should periodically assess their monetary awards systems to ensure that they help attract and retain qualified staff. Patent examiners' awards are based largely on the number of applications they process, but the assumptions underlying their application processing quotas have not been updated since 1976. USPTO management and examiners have differing opinions on whether these assumptions need to be updated. For example, according to examiners, the assumptions do not reflect the impact of the increased use of electronic tools that has reduced the time required to find relevant patent literature but at the same time has increased the amount of literature that must be reviewed. As a result, many of the examiners and supervisory patent examiners in our focus groups and respondents to previous agency surveys reported that examiners do not have enough time to conduct high-quality reviews of patent applications. According to agency surveys, these inadequate time frames create a stressful work environment and is cited in the agency's exit surveys as a primary reason examiners leave the agency.

- Finally, counter to current workforce models, USPTO does not require ongoing technical education for patent examiners, which could negatively affect the quality of its patent examination workforce. According to agency officials, examiners automatically maintain currency with their technical fields by just doing their job of examining applications, which they believe contains the most cutting-edge information. However, patent examiners and supervisory patent examiners disagreed and said that the literature they review in applications is outdated, particularly in rapidly evolving technologies. USPTO offers some voluntary in-house training, but the agency could provide no data on the extent to which examiners have taken advantage of such training. Moreover, patent examiners told us that they are reluctant to attend such training, given the time demands involved. In contrast, USPTO's policy requires examiners to attend extensive training provided by the agency on legal issues on which examiners are periodically tested.

Although USPTO has taken a number of steps to enhance its recruiting efforts and better target a qualified pool of candidates, in light of its long-standing human capital challenges, we are recommending that it develop formal strategies to improve communication and collaboration across all levels of the organization, which will also help resolve differences of opinion between management and examiners on such issues as the assumptions underlying the quota system and requirements for technical training. In its written comments on a draft of our report (reprinted in appendix II), USPTO agreed with our findings, conclusions, and recommendations. In addition, the agency provided technical comments that we have incorporated as appropriate.

Background

USPTO administers U.S. patent and trademark law to encourage innovation and advance science and technology in two ways. First, USPTO grants to inventors exclusive rights to their inventions for a limited period of time, usually 20 years. During this time, the inventor can exclude others from making, using, selling or importing the invention. Second, the agency preserves and disseminates patent information, for example on issued patents and most patent applications. Such information allows other inventors to improve upon the invention in the original application and apply for their own patent.

To obtain a patent, inventors—or more usually their attorneys or agents—submit to USPTO an application that fully discloses and clearly describes one or more distinct innovative features of the proposed invention (called claims) and pays a filing fee to begin the examination process. USPTO evaluates the application for completeness, classifies it by the type of patent and the technology involved,[9] and assigns it for review to one of its operational units, called technology centers, that specialize in specific areas of science and engineering.[10] Supervisors in each technology center then assign the application to a patent examiner for further review. For each claim in the application, the examiner searches and analyzes relevant United States and international patents, journals, and other literature to determine whether the proposed invention merits a patent—that is, whether the invention is a new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement to one that already exists. The examiner may contact the applicant on one or more occasions to resolve questions and obtain additional information to determine the proposed invention's potential patentability. If the examiner determines that the proposed invention merits a patent, the applicant is informed, and, upon payment of a fee, USPTO issues a patent. The applicant may abandon the application at any time during the examination process. If the application is denied a patent, the applicant may appeal the decision within an established time. Each examiner typically reviews applications in the order in which they are received by USPTO.

The time from the date an application is filed until a patent is granted, denied, or the application is abandoned is called "overall pendency." Over the past decade, overall pendency has increased on average from 20 to almost 28 months. However, pendency varies by technology center, ranging from 24 months for applications in such fields as transportation, agriculture, electronic commerce, mechanical engineering, and manufacturing to 41 months for applications in the fields of computer architecture, software and information security (see table 1). In addition to overall pendency, USPTO monitors the time from when an application is filed until the examiner makes an initial assessment of the proposed invention's patentability and informs the applicant, called first action pendency. First action pendency also has generally increased in the past decade from 8 to over 20 months. In 2004, first action pendency ranged from an average of 14 months for applications in such fields as semiconductors and optical systems to 33 months for computer architecture and software applications. Such measures of pendency help USPTO assess its effectiveness in reviewing patent applications.

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[9] Patents typically fall into one of three categories: (1) utility—for useful inventions, such as processes, machines, articles of manufacture, or composition of matter; (2) design—for changes in configuration, shape, or surface ornamentation that do not involve changes in function; or (3) plant—for asexually reproducible plants. A fourth category, "reissue patents," refers to patents USPTO grants as replacements for any patent that was in some way defective; these patents constituted less than one-half of 1 percent of patents issued in fiscal year 2003.

[10] USPTO's eight technology centers are: (1) Biotechnology and Organic Chemistry; (2) Chemical and Materials Engineering; (3) Computer Architecture, Software, and Information Security; (4) Communications; (5) Semiconductors, Electrical and Optical Systems and Components; (6) Transportation, Electronic Commerce, Construction, Agriculture, National Security and License and Review; (7) Mechanical Engineering, Manufacturing, and Products; and (8) Designs for Articles of Manufacture.

Table 1: USPTO Average Patent Pendency by Technology Center, 2004

Months

Technology center	Overall pendency	First action pendency
Biotechnology and Organic Chemistry	29.9	19.2
Chemical and Materials Engineering	27.6	17.9
Communications	40.5	31.4
Computer Architecture, Software and Information Security	41.1	33.3
Mechanical Engineering, Manufacturing, Products and Design	24.1	15.2
Semiconductor, Electrical, Optical Systems and Components	23.9	14.0
Transportation, Construction, Agriculture, and Electronic Commerce	24.1	15.6
Average	27.6	20.2

Source: USPTO.

USPTO Has Made Greater Progress on Strategic Plan Initiatives That Enhance the Agency's Capability Rather Than Productivity and Agility

USPTO has made greater progress in implementing its Strategic Plan initiatives to make the patent organization more capable than it has been in implementing its productivity and agility initiatives. Specifically, of the activities planned for completion by December 2004, the agency has fully or partially implemented all 23 of the initiatives related to its capability theme to improve the skills of employees, enhance quality assurance, and alter the patent process through legislative and rule changes. In contrast, USPTO has partially implemented only 1 of the 4 initiatives related to the productivity theme to restructure fees and expand examination options for patent applicants and has fully or partially implemented 7 of the 11 initiatives related to the agility theme to increase electronic processing of patent applications and reduce examiners' responsibilities for literature searches. In explaining why some initiatives have not been implemented, agency officials primarily cited the need for additional funding. With passage of the legislation in December 2004 to restructure and increase the fees available to USPTO, the agency is re-evaluating the feasibility of many initiatives that it had deferred or suspended. For more details on USPTO's progress in implementing the 38 initiatives in the Strategic Plan, see appendix III.

USPTO Has Made Substantial Progress on Its Capability Initiatives

To improve the quality of its reviews of patent applications through workforce and process improvements, USPTO developed 23 capability initiatives: 9 to improve the skills of its workforce, 5 to enhance its quality assurance program, and 9 to improve processes through legislative and rule changes.

Workforce Skills Improvements

As shown in table 2, USPTO has implemented 5 and partially implemented 4 of the 9 workforce skills initiatives.

Table 2: Status of Capability Initiatives to Improve Workforce Skills

Initiatives	Implemented	Partially implemented	Not implemented
Increase the pool of qualified management candidates by adding awards to total compensation	X		
Explore alternate organizational structures for the workplace	X		
Develop interim pre-employment measures to assess English language skills	X		
Recertify the skills of examiners with authority to issue patents (primary examiners) through examinations and expanded work product reviews	X		
Certify that examiners possess the requisite knowledge, skills, and abilities prior to promotion to a position with authority to negotiate on behalf of USPTO	X		
Improve the selection and training of supervisory patent examiners		X	
Use examinations and other means to ensure that new patent examiners possess the requisite skills prior to promotion		X	
Implement a pre-employment test to assess English language skills		X	
Create an Enterprise Training Division		X	

Source: GAO analysis of USPTO data.

Although the agency has not estimated how much funding would be needed to implement the final 4 initiatives, their full implementation was hindered, in part by funding constraints, agency officials said. The current status of these partially completed initiatives is as follows:

- To improve the selection and training of managers, USPTO has added proficiency in supervisory skills to the requirements for a supervisory examiner and in 2004 required applicants for such positions to pass an examination, but the agency has not fully developed the supervisory curriculum or trained supervisors.

- To help ensure that new examiners have the requisite skills prior to promotion, USPTO has identified the knowledge, skills, and abilities needed for patent examiners and established training units in work groups for new examiners, but has not developed a structured process for subsequent promotions.

- To implement a pre-employment test to assess English language communication skills of new patent examiners, USPTO has, among other things, revised its vacancy announcements to include English language proficiency as a required skill but has not developed an automated pre-employment test of such skills.

- USPTO has developed an action plan to establish an Enterprise Training Division, which was to have been in place in 2003, to consolidate responsibility for conducting legally required and other agencywide training, developing training policy, and monitoring funds spent on training.

Quality Assurance Enhancements

As shown in table 3, USPTO has implemented 3 and partially implemented 2 of the 5 capability initiatives to enhance its quality assurance program.

Table 3: Status of Capability Initiatives to Enhance Quality Assurance

Initiatives	Implemented	Partially implemented	Not implemented
Expand current quality assurance program to include works in progress (in-process reviews)	X		
Establish "second pair of eyes" reviews in each technology center	X		
Survey customer regarding transactions with USPTO on specific applications to supplement comprehensive customer surveys	X		
Evaluate the quality of examiners' literature searches		X	
Enhance the reviewable record for each patent application with additional information from the applicant and examiner		X	

Source: GAO analysis of USPTO data.

The status of the initiatives USPTO has partially implemented is as follows:

- The agency has begun to develop a plan and criteria to review the quality of searches and anticipates incorporating such reviews in the quality assurance program during fiscal year 2006.

- To enhance the reviewable record for patent applications, USPTO has developed guidance and amended forms to allow both examiners and applicants to provide additional information on the content of interviews and reason for decisions and strongly recommends, rather than requires, applicants and examiners to do so.

Process Improvements Related to Legislative and Rule Changes

As shown in table 4, of the 9 capability initiatives to streamline patent processing through legislative and rule changes, USPTO has implemented 1 and partially implemented 8.

Table 4: Status of Capability Initiatives to Change Legislation and Rules

Initiatives	Implemented	Partially implemented	Not implemented
Delete the requirement for physical surrender of the original patent papers	X		
Certify the legal knowledge of patent attorneys and agents who wish to practice before USPTO and periodically recertify the skills of practicing attorneys and agents		X	
Evaluate whether to adopt a unity of invention standard		X	
Simplify adjustments to the patent term		X	
Permit individuals who have been assigned patent rights to sign an oath declaring that the inventor is the original and first inventor		X	
Permit individuals who have been assigned patent rights to broaden the claims in an application		X	
Correct an inconsistency regarding unintentionally delayed submission of certain claims		X	
Eliminate certain exemptions from the requirement to publish most patent applications within 18 months of when they were first filed		X	
Amend current legislation regarding certain limitations on an inventors' right to obtain a patent		X	

Source: GAO analysis of USPTO data.

Although full implementation of these initiatives is largely dependent on actions by Congress, the status of the 8 partially implemented initiatives is as follows:

- To certify the legal knowledge of newly registering and practicing patent attorneys and agents and to monitor their practice, the agency offers registration examinations electronically year-round and issued proposed rules to harmonize ethics and disciplinary actions with the requirements in place in most states, but has not yet developed a formal program of continuing legal education requirements to periodically recertify the skills of practicing attorneys and agents.
- To evaluate whether to adopt a unity standard to harmonize U.S. examination practices with international standards and allow U.S. applicants to obtain a single patent on related claims that must currently

be pursued in separate patent applications in the United States, USPTO began a study of the changes needed to adopt a unity standard and sought public comment but has not completed its analysis, reached a decision, or drafted and introduced implementing legislation.

- For the other 6 partially implemented initiatives, USPTO is drafting proposed legislation or obtaining administrative clearance to introduce it.

USPTO Has Made Less Progress Implementing Its Productivity and Agility Initiatives

As shown in table 5, USPTO has not implemented 3 of the 4 initiatives that focus on accelerating the time to process patent applications and expand public input and has partially implemented only 1 of the productivity initiatives that allow the agency to increase fees and retain the funds. Following passage of legislation in 2004, USPTO has issued rules to increase fees generally and restructure fees to include separate components for different stages of processing both domestic and international patent applications, and for filing the application, searching the literature, and examining the claims. The separate components could, under certain circumstances, be refunded to the applicant. USPTO has not issued rules governing the refund of domestic fees. The revised fees are effective for 2005 and 2006.

Table 5: Status of Productivity Initiatives

Initiatives	Implemented	Partially implemented	Not implemented
Restructure fees and provide for refunds		X	
Offer patent applicants a choice of up to five examination options, based in part on the ability to rely on searches conducted by others			X
Offer patent applicants the option of an accelerated examination			X
Revise postgrant review procedures to allow greater public input			X

Source: GAO analysis of USPTO data.

Similarly, as shown in table 6, USPTO has not implemented 4 of the 11 initiatives related to agility, has only implemented 1 and partially implemented 6. These 11 initiatives are designed to further the agency's goal to create a more flexible organization and include efforts to increase electronic processing of patent applications, reduce examiners' responsibilities for literature searches, and participate in worldwide efforts to streamline processes and strengthen intellectual property protection.

Table 6: Status of Agility Initiatives

Initiatives	Implemented	Partially implemented	Not implemented
Establish an information security program	X		
Transition to electronic patent processing		X	
Transition to electronic processing for postgrant reviews		X	
Ensure availability of critical data in the event of a catastrophic systems failure		X	
Promote international harmonization and pursue goals to strengthen international intellectual property rights of U.S. inventors		X	
Pursue international agreements to share patent search results		X	
Accelerate Patent Cooperation Treaty reforms		X	
Rely on other sources to classify patent documents			X
Rely on other sources to support domestic and international literature searches			X
Rely on other sources to transition to a new global patent classification system			X
Develop stringent conflict of interest clauses for search firms			X

Source: GAO analysis of USPTO data.

The status of the 6 partially implemented agility initiatives to increase electronic processing and harmonize U.S. and international practices is as follows:

- Although USPTO has largely accomplished the actions related to implementing image-based electronic processing of patent applications, it has not achieved the full extent of electronic sharing of patent documents with the European Patent Office the initiative had anticipated and the two offices continue to finalize security and protocols between their servers.

- USPTO has amended rules to generally allow electronic filing of postgrant review documents and trained additional judges in streamlined procedures, but it has not defined records management schedules for electronic documents or implemented full electronic processing capabilities to support these reviews, such as text searching and the ability to receive, file, store, and view multimedia files.

- To ensure the availability of critical data in the event of a catastrophic failure, USPTO has certified and accredited its classified system and its mission-critical and business-essential systems, uses scanning tools to identify security weaknesses, and uses intrusion detection systems, but has not acquired the hardware, software, staff, and facilities for a backup data center.

- To promote harmonization of patent processing among international intellectual property offices and pursue goals to strengthen international intellectual property rights of U.S. inventors, USPTO participated in substantive patent treaty discussions that addressed such topics as the first-to-file (European) versus the first-to-invent (U.S.) standards, access to genetic resources, and definitions for such terms as prior art and novelty.

- To pursue multi- and bilateral agreements with other intellectual property offices, USPTO completed pilot programs to compare search results with the Japan and European Patent Offices and with patent offices in Australia and the United Kingdom.

- Regarding the acceleration of Patent Cooperation Treaty reforms, USPTO indicated that many significant reform procedures have been adopted in the last several years.

Although USPTO has not determined how much funding would be needed, officials said that the lack of adequate funding largely limited its ability to complete planned actions on productivity and agility initiatives that had not been fully implemented. With passage of the fee-restructuring legislation in December 2004, USPTO plans to commence work on these suspended initiatives. For example, it has assigned new teams to evaluate the feasibility of using contractors and international intellectual property offices to conduct literature searches. For greater detail on USPTO's progress in implementing the 38 initiatives in the Strategic Plan, see appendix III.

USPTO Has Taken Steps to Help Attract and Retain a Qualified Patent Examiner Workforce, but Long-Term Success Is Uncertain

Since 2000, USPTO has taken steps intended to help attract and retain a qualified patent examination workforce. The agency has enhanced its recruiting efforts and has used many human capital flexibilities to attract and retain qualified patent examiners. However, during the past 5 years, the agency's recruiting efforts and use of benefits have not been consistently sustained, and officials and examiners at all levels in the agency told us that the economy has more of an impact on USPTO's ability to attract and retain examiners than any actions taken by the agency. Consequently, how the agency's actions will affect its long-term ability to maintain a highly qualified workforce is unclear. While USPTO has been able to meet its hiring goals, attrition has recently increased.

USPTO Has Enhanced Recruiting Efforts to Attract Qualified Examiners

USPTO's recent recruiting efforts have incorporated several measures identified by GAO and others as necessary to attract a qualified workforce.[11] First, in 2003, to help select qualified applicants, USPTO identified the knowledge, skills, and abilities that examiners need to effectively fulfill their responsibilities. As part of this study, USPTO conducted focus group meetings with, and surveys of, experienced examiners to identify and validate key skills.[12] In doing so, the agency was responding to a recommendation from the Department of Commerce's OIG to better target candidates likely to stay at USPTO.[13]

Second, in 2004, the agency's permanent recruiting team, composed of senior and line managers,[14] participated in various recruiting events, including visits to the 10 schools that the agency targeted based on the diversity of their student population and the strength of their engineering and science programs.[15] The team also visited 22 additional schools, participated in two job fairs, and attended three conferences sponsored by professional societies. To assist the recruiting team, USPTO hired a consultant to develop a new brand image for the agency, shown in figure 1 below.[16] As part of this effort, USPTO and the consultant surveyed USPTO managers and supervisors and conducted focus groups with a range of ethnically diverse audiences, from college seniors to experienced professionals, to identify the characteristics of examiners and how the target market perceives the agency, as well as to get a sense of their work habits, values, and perceptions of work at USPTO. According to USPTO, the agency's new brand focuses on the vital role intellectual property plays in the U.S. economy and the career momentum of patent examiners. Agency officials said that USPTO uses its employment brand image at every opportunity, from Internet banner ads to print advertisements. They believe that this has enhanced public awareness of the agency and has helped distinguish USPTO from other employers.

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[11] See GAO, *Human Capital: A Self-Assessment Checklist for Agency Leaders*, GAO/OCG-00-14G, version 1 (Washington, D.C.: September 2000); and Office of Personnel Management, *Human Capital Assessment Accountability Framework* (Washington, D.C., Sept. 20, 2000).

[12] USPTO, KSA Work Team: Knowledge, Skills and Abilities Project (Alexandria, Va., August 2003).

[13] Department of Commerce, Office of Inspector General, *U.S. Patent and Trademark Office: Patent Examiner Hiring Process Should be Improved*, Final Inspection Report No. BTD-14432-2-0001 (Washington, D.C., March 2002).

[14] USPTO's permanent recruiting team was established in 2002. However, the agency suspended recruiting efforts in 2002 and 2003 in the face of budgetary uncertainty.

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[15] The 10 target schools selected are Florida International University, North Carolina Agricultural and Technical State University, North Carolina State University, University of Florida, University of Maryland, University of Pennsylvania, University of Puerto Rico-Mayaguez, University of Virginia, University of Wisconsin-Madison, and Virginia Polytechnic and State University.

[16] TMP Worldwide Advertising and Communications, *USPTO Task 1: Research and Evaluation* (Alexandria, Va., Mar. 10, 2004).

Figure 1: USPTO's 2004 Brand Image

SCIENTISTS & ENGINEERS
UNITED STATES PATENT AND TRADEMARK OFFICE
FORWARD
THINKING
mass x velocity = career momentum

Source: USPTO.

Figure 2: USPTO's 2002 Brand Image

Source: USPTO.

Finally, for 2005, USPTO developed a formal recruiting plan that, among other things, identified hiring goals for each technology center and described USPTO's efforts to establish ongoing partnerships with the 10 target schools. In addition, USPTO trained its recruiters in effective interviewing techniques to help them better describe the production system and incorporated references to the production-oriented work environment in its recruitment literature. During a USPTO career fair in February 2005, we observed that potential candidates were provided with a range of information about the work environment at the agency, received handouts, and heard a formal presentation about the agency and the role and responsibilities of a patent examiner. The presentation also included overviews of the basics of intellectual property, the patent examination process, USPTO's production model, the skill set needed for a successful patent examiner, and the benefits the agency offers.

USPTO Has Used Many Federal Human Capital Benefits to Attract and Retain Examiners

USPTO has used many of the human capital benefits available under federal personnel regulations to attract and retain qualified patent examiners. Among other benefits, USPTO has offered

- recruitment bonuses ranging from $600 to over $10,000;
- a special pay rate for patent examiners that is 10 percent above federal salaries for comparable jobs;
- noncompetitive promotion to the full performance level;
- flexible spending accounts that allow examiners to set aside funds for expenses related to health care and care for dependents;
- reimbursement for law school tuition;
- a transit subsidy program that was recognized in 2003 and 2004 as one of the best in the greater Washington, D.C., area;
- flexible working schedules, including the ability to schedule hours off during midday;
- work at home opportunities for certain supervisory and senior examiners;
- no-cost health screenings at an on-site health unit staffed with a registered nurse and part-time physician;
- casual dress policy; and
- on-site child care and fitness centers at USPTO's new facility.

According to many of the supervisors and examiners in our focus groups, these benefits were a key reason they were attracted to USPTO and are a reason they continue to stay. The benefits most frequently cited as important by examiners were the flexible working schedules and competitive salaries. Many supervisors and examiners said that the ability to set their own hours allowed them to better coordinate their work schedules with their personal commitments, such as a child's school or day care schedule. Concerning salaries, examiners also cited the special pay rate offered by USPTO as increasing the agency's competitiveness with the private sector. Although entry-level pay for examiners may not be as high as in the private sector, examiners who have been with the agency for about 5 to 7 years can earn up to $100,000 annually,[17] and new examiners can increase their pay relatively rapidly, in part because of the noncompetitive promotion potential available at the agency. However, some examiners commented that the benefit of the special pay rate is eroding over time because examiners do not receive annual locality pay adjustments to compensate for the high cost of living in the Washington, D.C., area. According to USPTO management, in 2002 the agency sought such an adjustment, but OPM denied the request because of a lack of justification. In addition to basic salary, examiners may also earn various cash awards based on production or other types of meritorious performance.

Lack of Consistent Recruiting Efforts and Benefits, along with Changes in the Economy, Could Affect USPTO's Efforts

The long-term effect of USPTO's recruiting efforts and use of benefits is difficult to predict for a variety of reasons. First, many of USPTO's efforts have been in place for a relatively short duration and have not been consistently maintained. For example, as shown in table 7, USPTO suspended recruitment and hiring in fiscal year 2000, which agency officials said resulted in its inability to meet its hiring goals for the year. Except for 2002, in those years where USPTO used its recruiting strategy consistently, such as 2001, 2003, and 2004, it not only met its hiring goals, but exceeded them.

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[17] Career opportunities for patent examiners continue through the senior executive level. Historically, senior executives at USPTO have come from the ranks of examiners.

Table 7: USPTO Patent Examiner Hiring Data, Fiscal Years 2000–2004

Fiscal year	Examiner hiring goal	Examiner hires
2000	475	375
2001	360	414
2002	786	769
2003	300	308
2004	250	443

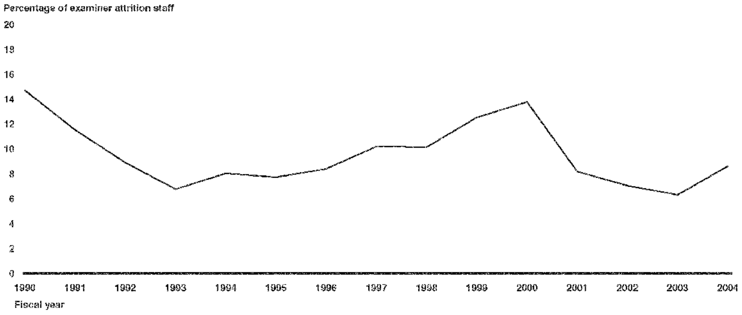
Source: USPTO.

The second reason that creates uncertainty about USPTO's success in retaining examiners is that USPTO has occasionally suspended some important employee benefits. For example, funding constraints led USPTO to discontinue reimbursing examiners for their law school tuition in 2002 and 2003, although the agency resumed reimbursement in 2004, when funding became available. Examiners who participated in our focus groups expressed dissatisfaction with the inconsistent availability of the benefits. Regarding law school tuition reimbursement, one examiner said, "I started when they started the [law school program] and then they cut it off and I had to pay [tuition] myself, which creates a large incentive to leave the office now that I have . . . student loans to pay off." Other examiners expressed similar views. More recently in March 2005, USPTO proposed to eliminate or modify other benefits such as examiners' ability to earn credit hours and alter examiners' ability to set their own work schedules. For example, unlike current practice, examiners would no longer be able to schedule hours off during midday without a written request approved in advance. These benefits were cited by examiners in our focus groups as key reasons for working at USPTO, and eliminating such benefits may impact future retention.

The third and possibly the most important factor that adds to the uncertainty surrounding the success of USPTO's recruitment efforts is the unknown potential impact of the economy. According to USPTO officials and examiners, because USPTO competes directly with the private sector for qualified individuals, changes in the economy have a greater impact on USPTO's ability to attract and retain examiners than any actions taken by the agency. They told us that when the economy picks up, more examiners tend to leave USPTO and fewer qualified candidates accept employment offers. Conversely, they said that when there is a downturn in the economy, employment opportunities at USPTO become more attractive. When discussing reasons for joining USPTO, many examiners in our focus groups cited job security and lack of other employment opportunities, making comments such as “I had been laid off from my prior job, and this was the only job offer I got at the time”; “I looked towards the government because I wanted job security”; and “. . . part of the reason I came to the office is that when I first came out of college, the job market was not great.”

The relationship between the economy and USPTO’s ability to attract and retain examiners is reflected in its attrition rates over time. As shown in figure 3, attrition among patent examiners declined from a high of almost 14 percent in 2000 to just over 6 percent in 2003. This decline coincided with a recession in 2001, a general slowdown of the economy, and subsequent collapse of the “high tech bubble”—which caused many Internet-based businesses to close, leaving computer scientists and engineers out of work. The decline in attrition was preceded by a more robust economy during a time when the high-tech industry was building up. At that time, attrition at USPTO was steadily rising.

Figure 3: Examiner Attrition as Percentage of Staff



Source: GAO.

Since 2004, attrition has risen again to almost 9 percent, fueled in part by an increase in the number of examiners who retired. By the end of fiscal year 2010, about 12 percent of examiners will be eligible to retire.[18] Another trend that could affect USPTO's efforts to maintain a highly qualified patent examination workforce is the high level of attrition among younger, less experienced examiners. While attrition among examiners who have been at USPTO for 3 or fewer years has declined each year since 2000, attrition among these examiners continues to account for over half of all examiners who leave the agency. Attrition of examiners with 3 or fewer years of experience is a particularly significant loss for USPTO because the agency invests considerable time and money helping new examiners become proficient during the first few years. Managers and examiners told us that examiners usually become fully proficient in conducting patent application reviews in about 4 to 6 years. Managers we spoke with said the agency needs continuous recruiting efforts to offset these trends and continue to attract the best candidates. They said they hope to have constant recruitment efforts and year-round hiring in the upcoming years.

USPTO Faces Long-standing Human Capital Challenges That Could Undermine Its Recruiting and Retention Efforts

Although USPTO has taken a number of steps to attract and retain a qualified patent examiner workforce, the agency continues to face three human capital challenges of a long-standing nature that could also undermine its efforts in the future if not addressed. Current workforce models developed by GAO and others to help federal agencies attract and retain a qualified workforce suggest, among other things, that agencies establish an agencywide communication strategy, including opportunities for feedback from employees; involving management, employees, and other stakeholders in making key decisions; have appropriately designed compensation and awards systems; and develop strategies to address current and future competencies and skills needed by staff. However, USPTO lacks a collaborative culture, has an awards system that is based on outdated information, and requires little ongoing technical training for patent examiners. USPTO management and examiners do not agree on the need to address these issues.

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[18] Governmentwide, about 40 percent of employees will be eligible to retire by that time.

USPTO Has Not Established Effective Mechanisms for Managers to Communicate and Collaborate with Examiners

Organizations with effective human capital models have strategies to communicate with employees at all levels of the organization, as well as involve them in key decision-making processes. However, lack of good communication and collaboration has been a long-standing problem at USPTO. For example, focus groups with examiners conducted by USPTO in 2000 identified a need for improved communication across all levels of the agency to assist in its efforts to retain examiners.[19] Accordingly, one of the goals listed in the Commissioner of Patent's 2003 performance appraisal plan was to establish an effective communication strategy. However, when we asked for the agency's communication strategy, USPTO management officials acknowledged the agency does not have a formal strategy. Instead, USPTO officials provided us with a list of activities undertaken by the agency to improve communication. However, most of these activities focused on improving communication among managers but not between managers and other levels of the organization, such as between managers and patent examiners. The efforts to communicate with examiners were largely confined to presenting information to examiners and generally were not interactive, according to examiners.

Patent examiners and supervisory patent examiners that participated in our focus groups frequently said that communication with USPTO management was poor and that managers provided them with inadequate or no information. They also said management is out of touch with examiners and their concerns and that communication with managers tends to be one way and hierarchical, with little opportunity for feedback. Management officials told us that informal feedback can always be provided by anyone in the organization—for example, through an e-mail to anyone in management. However, some patent examiners believe they will be penalized for offering any type of criticism of management actions or decisions and therefore do not provide this kind of feedback.

The lack of communication between management and examiners is exacerbated by the contentious working relationship between USPTO management and union officials and the complexity of the rules about what level of communication can occur between managers and examiners without involving the union. Union officials stated that a more collaborative spirit existed between USPTO and the examiners' union from the late 1990s to about 2001. During this period, both parties actively worked to improve their relationship. For example, in 2001, USPTO management and the union quickly reached an agreement that led to increased pay for examiners and paved the way for electronic processing of patent applications by having examiners rely more heavily on electronic searches of relevant patent literature. According to union officials, this agreement was negotiated in about 1-1/2 weeks, improved the morale of patent examiners, and made them feel valued and appreciated. Since that time however, both USPTO management and union officials agree that their working relationship has not been as productive. Both say that despite several attempts, neither USPTO managers nor union officials have improved this relationship and that issues raised by either side are routinely presented for arbitration before the Federal Labor Relations Authority[20] because the two sides cannot agree. USPTO and union officials are currently disputing the validity of their 1986 collective bargaining agreement, which USPTO deems defunct.[21] In February 2004, this issue was presented for arbitration to determine the validity of the agreement. According to union officials, the arbitrator agreed with their position that the agreement was still valid and ordered a 1-year hiatus on negotiations on a new agreement. USPTO contends that the arbitrator said the two had "tacit agreements" but did not define the term. In March 2005, without continuing any debate regarding the validity of the 1986 agreement, USPTO issued a proposed new collective bargaining agreement with the union. The union denounced this proposal, reporting in its newsletter to examiners that "USPTO declares war on employee professionalism and patent system integrity."

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[19] U.S. Patent and Trademark Office, *Retention Focus Sessions with Examiners and Primary Examiners, Center for Quality Service* (Alexandria, Va., February 2000).

Some USPTO managers alluded to this contentious relationship as one of the reasons why they have limited communication with patent examiners, who are represented by the union even if they decide not to join. Specifically, they believe they cannot solicit the input of employees directly without engaging the union. Another official, however, told us that nothing prevents the agency from having "town hall" type meetings to discuss potential changes, as long as the agency does not promise examiners a benefit that impacts their working conditions. Union officials agreed that USPTO can invite comments from examiners on a plan or proposal; however, if the proposal concerns a negotiating issue, the agency must consult the examiners' union, which is their exclusive representative with regard to working conditions. For example, union officials said that agency management can involve examiners on discussions of substantive issues related to patent law and practice, such as how to implement electronic filing, but must consult the union to obtain examiners' views on issues such as the development of the Strategic Plan which contains initiatives that would entail, for example, additional reviews of examiners work and other changes to working conditions.

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[20] The Federal Labor Relations Authority was established by the Civil Service Reform Act of 1978. It is charged with providing leadership in establishing policies and guidance relating to federal sector labor-management relations and with administering and resolving disputes under Title VII of the Civil Service Reform Act of 1978.

[21] A collective bargaining agreement is an official contract between USPTO and the union that sets forth the mutual understanding between the agency and union officials relative to personnel policies and practices and matters affecting the working conditions of patent examiners.

Given the lack of effective communication mechanisms between management and patent examiners and the poor relationship between management and the union, patent examiners report little involvement in providing input to key decision-making processes. For example, some of the examiners in our focus groups stated that although they had heard of the agency's Strategic Plan, they were not involved in developing it and had no idea what it entailed or how it was to be implemented. USPTO management officials we spoke to acknowledged that employees had no role in developing the Strategic Plan even though USPTO identifies its employees as a key stakeholder in the plan. This lack of employee involvement is not a new problem for the agency. For example, a study about the agency's performance measurement and rewards system conducted in 1995 by a private consultant stated that the agency must strive to include employees at all levels of the organization in the decision-making process to both introduce a variety of perspectives and experiences and to generate the critical support of employees to any new system developed.[22] Additionally, responses to employee surveys conducted in 1998 and 2001 by USPTO and others indicate that employees believed that they did not play a meaningful role in decision making.[23] Specifically, a quarter of the examiners surveyed in 1998 expressed satisfaction with their level of involvement in decisions that affect their work. In 2001, less than half of examiners who responded to the survey said they believe USPTO management trusts and respects them or values their opinions. Agency-specific data from the 2004 federal human capital survey conducted by the Office of Personnel Management have not been released.

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[22] Booz-Allen & Hamilton Inc., *PTO Goal Study—Task One: An Assessment of the Current Performance Measurements and Rewards System* (May 1995).

[23] Sirota Consulting, *Patents: USPTO Survey Results* (Alexandria, Va., November 2000); USPTO, Office of Quality Management and Training, Center for Quality Services, *Patents: 2001 Employee Survey, Summary of Findings* (Alexandria, Va., September 2001); and Center for Quality Services, *2002 Federal Human Capital Survey, Overview of USPTO Results* (Washington, D.C., April 2003).

Managers told us that examiners do not need to be involved in decision making because all of the agency's senior managers—from the Commissioner down—"came up through the ranks." Moreover, they said the basic role of the agency has not changed in 200 years. As a result, senior managers believe they bring the staff perspective to all planning and decision-making activities. However, examiners in our focus groups believe that senior managers are out of touch with the role of examiners, making comments such as "I think it would help if upper management who haven't examined in decades could try to do some of it now—it's so drastically different than when they were doing it—and realize how difficult it is, and then maybe they might get a clue. I really don't think that they realize how much work it takes to examine an application. It is so different than when they were examining." Examiners in our focus groups said that the lack of communication and involvement has created an atmosphere of distrust in management officials by examiners and has lowered examiners' morale.

Examiners' Monetary Awards Are Based on Outdated Assumptions about the Time It Takes to Process a Patent Application

According to human capital models, an agency's compensation and rewards system should help it attract, motivate, retain, and reward the people it needs to achieve its goals. To ensure that their systems meet these criteria, agencies should periodically assess how they compensate staff and consider changes, as appropriate. Patent examiners' monetary awards are based largely on the number of patent applications they process, but the assumptions underlying their annual application-processing quotas (called production quotas) have not been updated since 1976. Depending on the type of patent and the skill level of the examiner, each examiner is expected to process an average of 87 applications per year at a rate of 19 hours per application. Examiners who consistently do not meet their quotas may be dismissed. Patent examiners may earn cash awards based on the extent to which they exceed their production quotas.[24] Although examiners in our focus groups generally support production quotas as a way to guide their work and provide an objective basis for cash awards, they said that the time estimates involved are no longer accurate.

Examiners in our focus groups told us that, in the last several decades, the tasks for processing applications have greatly increased while the time allowed has not. For example, examiners said the number of claims per application have increased, which in turn increases the amount of relevant literature they must review and analyze for each application. Also, while the greater use of electronic search tools has improved their access to relevant patent literature, the use of such tools has also increased the amount of literature they must review. In addition, the complexity of applications in some fields has increased significantly, requiring more time for a quality review. Neither USPTO nor the examiners union has collected information on the effects that such changes as improvements in electronic search capabilities have had on the time required to review patent applications.

Moreover, many examiners in our focus groups said that the time limitations of the current production quotas are inconsistent with producing high-quality work and do not adequately reflect the actual tasks and time required to examine applications. For example, examiners have responsibilities included in their job expectations, such as responding to calls from applicants and the public and providing more documentation for their decisions, which are not accounted for in the production model. Examiners expressed concern that although the agency's emphasis on quality has increased under the Strategic Plan, examiners have not been allowed more time to fulfill these increased responsibilities for quality, and there are no negative consequences for examiners who produce low-quality work. Examiners told us that voluntarily working overtime to meet quotas is common at USPTO, and they find it demoralizing not to have enough time to do a good quality job. In commenting on a draft of this report, USPTO stated that quality is a critical element of an examiner's performance standards and if an examiner does not maintain quality, their rating would reflect this deficiency. Consequences would depend on the level of deficiency.

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[24] Individual goals are adjusted based on the technology in the application and the skill level of the examiner. For example, a junior patent examiner has more time to process an application than a senior examiner. Similarly, examiners who process applications for biotechnology inventions have more time than examiners who process applications for some manufactured items.

Employee surveys conducted since 1998 suggest that these concerns are not new to the agency. Specifically, a quarter of the examiners who responded to the agency's employee surveys during the period 1998 to 2001 said that the amount of time available for their work was sufficient to produce high-quality products and services. The 1995 study conducted by a private consultant also noted that USPTO is production driven and that the agency's emphasis on production placed considerable stress on examiners. Although less than 25 percent of patent examiners who left USPTO in 2002 and 2004 actually completed an exit survey, about half who did cited dissatisfaction with the nature of the job, the production system, and the workload as factors that had the most impact on their decision to leave the agency.

In contrast, USPTO managers had a different perspective on the production model and its impact on examiners. They stated that the time estimates used in establishing production quotas do not need to be adjusted because the efficiencies gained through actions such as the greater use of technology have offset the demands resulting from changes such as greater complexity of the applications and increases in the number of claims. Moreover, they said that for an individual examiner, reviews of applications that take more time than the estimated average are generally offset by other reviews that take less time.

USPTO Does Not Require Ongoing Technical Education for Patent Examiners

Current workforce models suggest that professional organizations such as USPTO make appropriate investments in education, training, and other developmental opportunities to help build the competencies of its employees. Reviewing patent applications involves knowledge and understanding of highly technical subjects, but USPTO does not require ongoing training on these subjects. Instead, USPTO only requires newly hired examiners to take extensive training on how to be a patent examiner during the first year, and all other required training is focused on legal training. For example, newly hired examiners are required, within their first 10 months at the agency, to take about 200 hours of training on such topics as procedures for examining patent applications, electronic tools used in the examination process, and patent law and evidence. In addition, almost all patent examiners are required to take a range of ongoing training on legal matters, including patent law. As a result of the implementation of some Strategic Plan initiatives, additional mandatory training to help examiners prepare for tests to certify their legal competency and ensure their eligibility for promotion from a GS-12 level to a GS-13 is also required. In addition, patent examiners who have the authority to issue patents (generally GS-14s or above) must pass tests on the content of legal training every 3 years. In contrast, patent examiners are not required to undertake any ongoing training to maintain expertise in their area of technology, even though the agency acknowledges that such training is important, especially for electrical and electronic engineers. Specifically, in its 2001 justification for examiners' special pay rates, the agency stated, "Engineers who fail to keep up with the rapid changes in technology, regardless of degree, risk technological obsolescence."

USPTO does offer some voluntary in-house training, such as technology fairs and industry days at which scientists and others are invited to lecture to help keep patent examiners current on the technical aspects of their work. Because this training is not required by USPTO, patent examiners told us they are reluctant to attend such training given the time demands involved. USPTO also offers a voluntary external training program for examiners to update their technical skills. Under this program, examiners may take technical courses related to their area of expertise at an accredited college or university. USPTO will pay up to $5,000 per fiscal year for each participant and up to $150 per course for required materials, such as books and lab fees. In addition, agency managers told us the agency will pay registration fees for a small number of examiners to attend conferences, although sometimes it will not pay travel expenses. While USPTO officials told us they knew of examiners who had taken advantage of these opportunities, the agency could provide no data on the extent to which examiners had taken advantage of these voluntary training opportunities. Some examiners in our focus groups said that they did participate in these training opportunities, but others said they did not because of the monetary costs or personal time involved.

USPTO believes that a requirement for ongoing technical training is not necessary for patent examiners because the nature of the job keeps them up-to-date with the latest technology. According to agency officials, the primary method for examiners to keep current in their technical fields is by processing patent applications. However, patent examiners and supervisors in our focus groups said that often the literature cited in the application they review for patents, particularly in rapidly developing technologies, is outdated, can be too narrowly focused, and does not provide them the big picture of the field. For example, in certain fields, such as computer software and biotechnology, some examiners told us that the information cited in the application may be several years old even though it may have been current at the time the application was submitted.

Conclusions

To improve its ability to attract and retain the highly educated and qualified patent examiners it needs, USPTO has taken a number of steps recognized by experts as characteristic of highly effective organizations. However, the lack of an effective communication strategy and a collaborative environment that is inclusive of all layers within the organization could undermine some of USPTO's efforts. Specifically, the lack of communication and collaborative culture has resulted in a general distrust of management by examiners and has caused a significant divide between management and examiners on important issues such as the appropriateness of the current production model and the need for technical training. We believe that unless USPTO begins the process of developing an open, transparent, and collaborative work environment, its efforts to hire and retain examiners may be negatively impacted in the long run.

Recommendations for Executive Action

We recommend that the Secretary of Commerce direct the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office to take the following two actions: develop formal strategies to (1) improve communication between management and patent examiners and between management and union officials, and (2) foster greater collaboration among all levels of the organization to resolve key issues discussed in this report, such as the assumptions underlying the quota system and the need for required technical training.

Agency Comments and Our Evaluation

In written comments on a draft of our report, the Under Secretary of Commerce for Intellectual Property and Director of USPTO agreed with our findings, conclusions, and recommendations. The agency's comments suggest that USPTO will develop a communication plan and labor management strategy and educate and inform employees about progress on initiatives, successes, and lessons learned. In addition, USPTO indicated that it would develop a more formalized technical program for patent examiners to ensure that their skills are fresh and ready to address state-of-the-art technology. USPTO also provided technical comments that we have incorporated, as appropriate. USPTO's comments are included in appendix II.

We are sending copies of this report to interested congressional committees; the Secretary of Commerce; the Under Secretary for Intellectual Property and Commissioner of the U.S. Patent and Trademark Office; and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or mittala@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made contributions to this report are listed in appendix IV.

Anu K. Mittal

Anu K. Mittal
Director, Natural Resources
and Environment

Appendix I

Scope and Methodology

We were asked to report on various efforts being undertaken by the U.S. Patent and Trademark Office (USPTO) about its (1) overall progress in implementing the initiatives in the 21st Century Strategic Plan related to the patent organization; (2) efforts to attract and retain a qualified patent workforce; and (3) remaining challenges, if any, in attracting and retaining a qualified patent workforce.

To determine USPTO's progress toward implementing the Strategic Plan initiatives for the patent organization, we reviewed the initiatives contained in the plan, as well as agency documents regarding USPTO's progress in implementing each initiative. We also interviewed key USPTO officials and union officials about the plan's implementation.

To determine what actions USPTO has taken to attract and retain a qualified patent workforce and what challenges, if any, the agency faces in this area, we reviewed USPTO's Workforce Plan and other policies and practices related to human capital. We interviewed USPTO management, union officials, and relevant interest groups, as well as officials from the Department of Commerce, its Office of Inspector General (OIG), and the Office of Personnel Management (OPM) about human capital initiatives undertaken by USPTO. We reviewed evaluations of USPTO human capital management efforts by OIG and by a private consultant. We reviewed USPTO employee surveys, USPTO documents on hiring and retention, and OPM reports on USPTO. We also reviewed results from USPTO and OPM employee surveys and compared human capital policies and practices with best practices recommended by GAO and OPM. In addition, we attended a USPTO career fair for patent examiners.

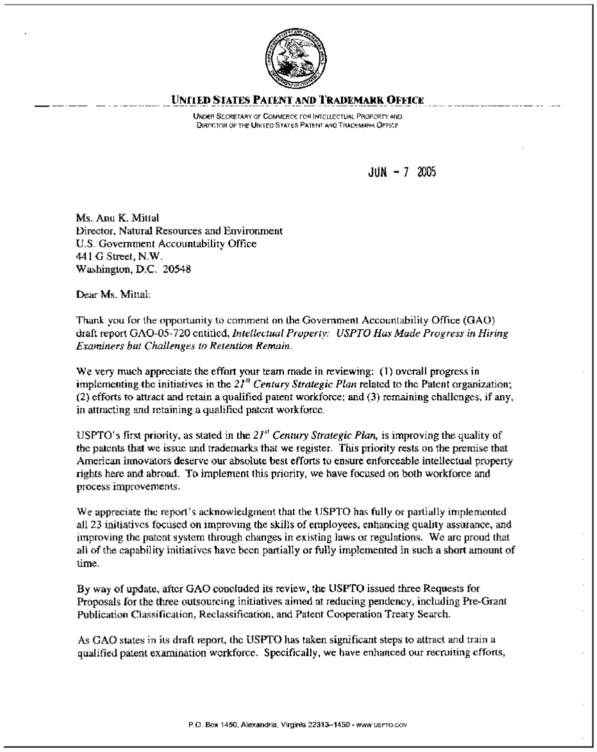
To obtain the perspective of patent examiners and supervisory patent examiners on issues related to USPTO's ability to attract and retain a qualified patent examination workforce, we conducted 11 focus groups. Participants were randomly selected from all patent examiners and supervisory patent examiners who had been at USPTO at least 9 months. A total of 91 examiners and supervisory examiners attended the focus groups. The number of participants in the groups ranged from 6 to 11; participants in 8 of the groups were patent examiners while the other 3 groups encompassed supervisory patent examiners. Participants were selected from both USPTO locations (Alexandria and Crystal City, Virginia). We developed questions for the focus groups based on literature reviews and by speaking with USPTO management, union officials, and interest groups. In addition, we developed a short questionnaire that asked for individual views of issues similar to those being discussed in the groups. Following each discussion question, participants filled out the corresponding questions in their questionnaires. Trained facilitators conducted the focus groups and transcripts were professionally prepared. Prior to using the transcripts, we checked each for accuracy and found that they were sufficiently accurate for the purposes of this study.

We conducted a content analysis in order to produce a summary of the respondents' comments made during the focus groups. The classification plan was developed by two GAO analysts who independently reviewed the transcripts and proposed classification categories for each question. The classification categories were finalized through discussion with a third analyst. One analyst then coded all comments made during each discussion question into the categories. The accuracy of the coding was checked by another analyst, who independently coded a random sample of transcript pages for each question. The accuracy of the content coding was sufficiently high for the purposes of this report. Finally, the number of comments in each category and subcategory was tallied, and the resulting summary of the comments was verified by a second analyst. A quantitative analysis was conducted on the data from the questionnaires.

Our review focused exclusively on the activities of the patent organization and not those of the trademark organization. We conducted our review from June 2004 through May 2005 in accordance with generally accepted government auditing standards.

Appendix II

Comments from the U.S. Patent and Trademark Office



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

JUN - 7 2005

Ms. Anu K. Mittal
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Ms. Mittal:

Thank you for the opportunity to comment on the Government Accountability Office (GAO) draft report GAO-05-720 entitled, *Intellectual Property: USPTO Has Made Progress in Hiring Examiners but Challenges to Retention Remain.*

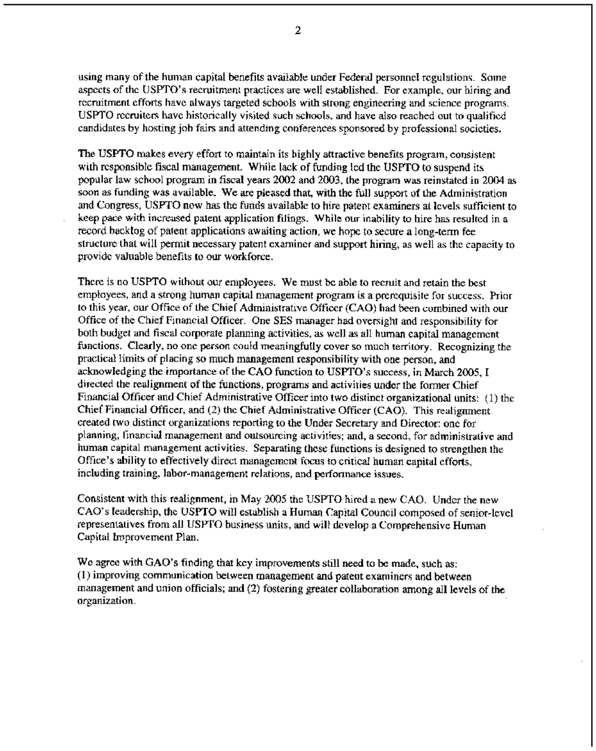
We very much appreciate the effort your team made in reviewing: (1) overall progress in implementing the initiatives in the *21st Century Strategic Plan* related to the Patent organization; (2) efforts to attract and retain a qualified patent workforce; and (3) remaining challenges, if any, in attracting and retaining a qualified patent workforce.

USPTO's first priority, as stated in the *21st Century Strategic Plan,* is improving the quality of the patents that we issue and trademarks that we register. This priority rests on the premise that American innovators deserve our absolute best efforts to ensure enforceable intellectual property rights here and abroad. To implement this priority, we have focused on both workforce and process improvements.

We appreciate the report's acknowledgment that the USPTO has fully or partially implemented all 23 initiatives focused on improving the skills of employees, enhancing quality assurance, and improving the patent system through changes in existing laws or regulations. We are proud that all of the capability initiatives have been partially or fully implemented in such a short amount of time.

By way of update, after GAO concluded its review, the USPTO issued three Requests for Proposals for the three outsourcing initiatives aimed at reducing pendency, including Pre-Grant Publication Classification, Reclassification, and Patent Cooperation Treaty Search.

As GAO states in its draft report, the USPTO has taken significant steps to attract and train a qualified patent examination workforce. Specifically, we have enhanced our recruiting efforts,



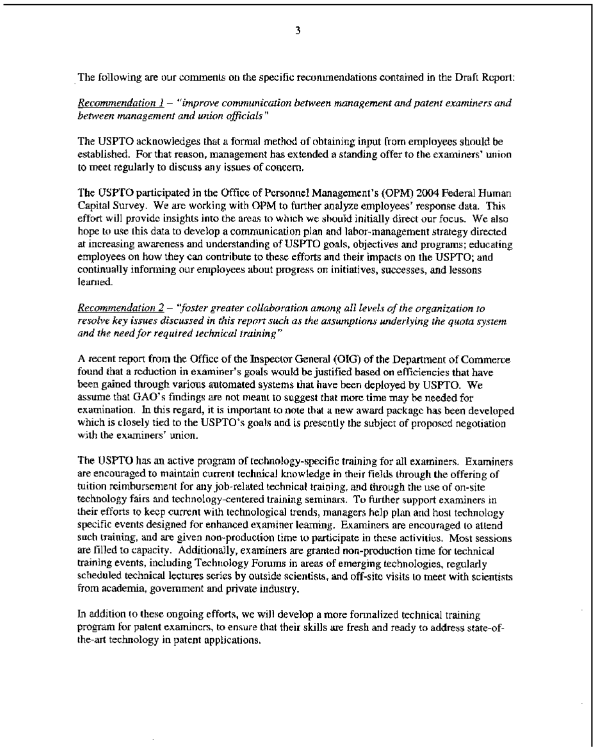
using many of the human capital benefits available under Federal personnel regulations. Some aspects of the USPTO's recruitment practices are well established. For example, our hiring and recruitment efforts have always targeted schools with strong engineering and science programs. USPTO recruiters have historically visited such schools, and have also reached out to qualified candidates by hosting job fairs and attending conferences sponsored by professional societies.

The USPTO makes every effort to maintain its highly attractive benefits program, consistent with responsible fiscal management. While lack of funding led the USPTO to suspend its popular law school program in fiscal years 2002 and 2003, the program was reinstated in 2004 as soon as funding was available. We are pleased that, with the full support of the Administration and Congress, USPTO now has the funds available to hire patent examiners at levels sufficient to keep pace with increased patent application filings. While our inability to hire has resulted in a record backlog of patent applications awaiting action, we hope to secure a long-term fee structure that will permit necessary patent examiner and support hiring, as well as the capacity to provide valuable benefits to our workforce.

There is no USPTO without our employees. We must be able to recruit and retain the best employees, and a strong human capital management program is a prerequisite for success. Prior to this year, our Office of the Chief Administrative Officer (CAO) had been combined with our Office of the Chief Financial Officer. One SES manager had oversight and responsibility for both budget and fiscal corporate planning activities, as well as all human capital management functions. Clearly, no one person could meaningfully cover so much territory. Recognizing the practical limits of placing so much management responsibility with one person, and acknowledging the importance of the CAO function to USPTO's success, in March 2005, I directed the realignment of the functions, programs and activities under the former Chief Financial Officer and Chief Administrative Officer into two distinct organizational units: (1) the Chief Financial Officer, and (2) the Chief Administrative Officer (CAO). This realignment created two distinct organizations reporting to the Under Secretary and Director: one for planning, financial management and outsourcing activities; and, a second, for administrative and human capital management activities. Separating these functions is designed to strengthen the Office's ability to effectively direct management focus to critical human capital efforts, including training, labor-management relations, and performance issues.

Consistent with this realignment, in May 2005 the USPTO hired a new CAO. Under the new CAO's leadership, the USPTO will establish a Human Capital Council composed of senior-level representatives from all USPTO business units, and will develop a Comprehensive Human Capital Improvement Plan.

We agree with GAO's finding that key improvements still need to be made, such as:
(1) improving communication between management and patent examiners and between management and union officials; and (2) fostering greater collaboration among all levels of the organization.



The following are our comments on the specific recommendations contained in the Draft Report:

Recommendation 1 – *"improve communication between management and patent examiners and between management and union officials"*

The USPTO acknowledges that a formal method of obtaining input from employees should be established. For that reason, management has extended a standing offer to the examiners' union to meet regularly to discuss any issues of concern.

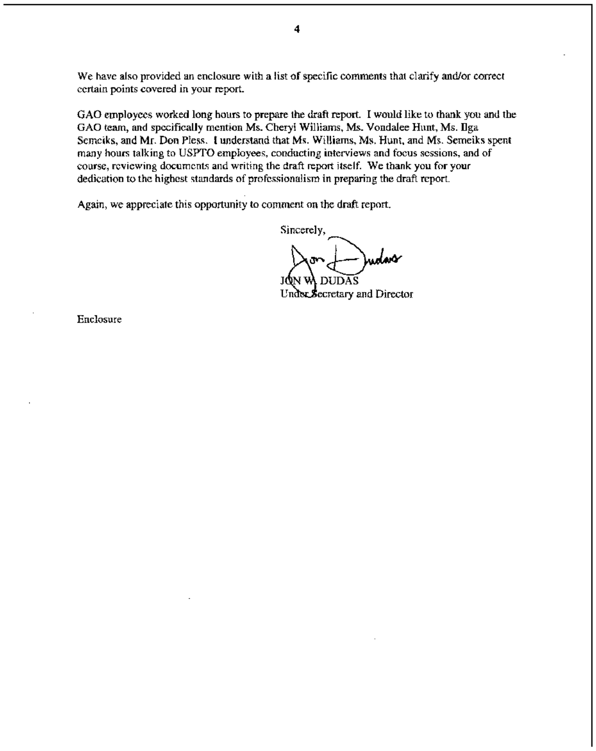
The USPTO participated in the Office of Personnel Management's (OPM) 2004 Federal Human Capital Survey. We are working with OPM to further analyze employees' response data. This effort will provide insights into the areas to which we should initially direct our focus. We also hope to use this data to develop a communication plan and labor-management strategy directed at increasing awareness and understanding of USPTO goals, objectives and programs; educating employees on how they can contribute to these efforts and their impacts on the USPTO; and continually informing our employees about progress on initiatives, successes, and lessons learned.

Recommendation 2 – *"foster greater collaboration among all levels of the organization to resolve key issues discussed in this report such as the assumptions underlying the quota system and the need for required technical training"*

A recent report from the Office of the Inspector General (OIG) of the Department of Commerce found that a reduction in examiner's goals would be justified based on efficiencies that have been gained through various automated systems that have been deployed by USPTO. We assume that GAO's findings are not meant to suggest that more time may be needed for examination. In this regard, it is important to note that a new award package has been developed which is closely tied to the USPTO's goals and is presently the subject of proposed negotiation with the examiners' union.

The USPTO has an active program of technology-specific training for all examiners. Examiners are encouraged to maintain current technical knowledge in their fields through the offering of tuition reimbursement for any job-related technical training, and through the use of on-site technology fairs and technology-centered training seminars. To further support examiners in their efforts to keep current with technological trends, managers help plan and host technology specific events designed for enhanced examiner learning. Examiners are encouraged to attend such training, and are given non-production time to participate in these activities. Most sessions are filled to capacity. Additionally, examiners are granted non-production time for technical training events, including Technology Forums in areas of emerging technologies, regularly scheduled technical lectures series by outside scientists, and off-site visits to meet with scientists from academia, government and private industry.

In addition to these ongoing efforts, we will develop a more formalized technical training program for patent examiners, to ensure that their skills are fresh and ready to address state-of-the-art technology in patent applications.



We have also provided an enclosure with a list of specific comments that clarify and/or correct certain points covered in your report.

GAO employees worked long hours to prepare the draft report. I would like to thank you and the GAO team, and specifically mention Ms. Cheryl Williams, Ms. Vondalee Hunt, Ms. Ilga Semeiks, and Mr. Don Pless. I understand that Ms. Williams, Ms. Hunt, and Ms. Semeiks spent many hours talking to USPTO employees, conducting interviews and focus sessions, and of course, reviewing documents and writing the draft report itself. We thank you for your dedication to the highest standards of professionalism in preparing the draft report.

Again, we appreciate this opportunity to comment on the draft report.

Sincerely,

Jon Dudas

JON W. DUDAS
Under Secretary and Director

Enclosure

Appendix III

Progress on Strategic Plan Initiatives

USPTO issued its 21st Century Strategic Plan in June 2002, then updated and rereleased it in February 2003. The Strategic Plan responds to the Government Performance and Results Act and direction from Congress. The plan is centered on three themes—capability, productivity, and agility.

Strategic Theme: Capability

To become a more capable organization that enhances quality through workforce and process improvements, USPTO developed initiatives to improve the skills of its workforce (transformation), enhance its quality assurance program (quality), and improve processes through rule changes or proposed legislative changes (legislative/rules changes).

Table 8: USPTO Capability Initiatives

Capability initiatives	Status of actions planned through December 2004	Implementation details
Transformation		
Increase the pool of competent, qualified candidates for management positions, and reward current managers by offering awards of up to 10 percent of base salary as part of the compensation package.	Implemented	Actions implemented: USPTO developed award criteria and sought input from the supervisory examiners' professional association and USPTO senior managers. The program was approved in 2003, and performance appraisal plans for supervisory examiners were revised for 2004. As of November 2004, awards had been paid to all qualifying managers.
Transform the workplace by exploring alternative organizational concepts and structures.	Implemented	Actions implemented: Conducted preliminary consultations and research with the National Academy of Public Administration in 2002.
Develop interim pre-employment measures to assess English language oral and written communication skills for new patent examiners.	Implemented	Actions implemented: Developed procedures for supervisory patent examiners and hiring officials to use in assessing communication skills, and trained individuals in their use.

(Continued From Previous Page)

Capability initiatives	Status of actions planned through December 2004	Implementation details
Recertify the skills of examiners with the authority to issue patents (primary examiners) through examinations and expanded reviews of work products.	Implemented	Actions implemented: Developed an examination to recertify primary examiners every 3 years. As of December 2004, approximately one-third of primary examiners had successfully completed the examination. An additional one-third will be tested in 2005 and 2006. Thereafter, primary examiners will be retested once every 3 years. Increase the number of primary examiners' work products that are reviewed in annual quality reviews to more than four. Require primary examiners to pass examinations on the content of periodic training on changes in patent law, practice, or procedures.
Certify the knowledge, skills, and abilities of examiners before they are promoted to a position with the authority to negotiate with applicants (partial signatory authority or GS-13 level).	Implemented	Actions implemented: In 2003, USPTO developed a legal competency examination to certify the skills of patent examiners prior to promotion to GS-13. From March through December 2004, 152 examiners had successfully completed the examination and been promoted. Another 85 had taken the examination to help them prepare for future promotion. The requirement to pass the examination became effective March 1, 2004.
Use examinations and other means to ensure that new patent examiners possess the requisite knowledge, skills, and abilities prior to initial promotion decisions.	Partial	Actions implemented: In 2003, USPTO identified the knowledge, skills, and abilities needed for patent examiners, established training units in work groups for new examiners (Training Art Units), and developed recruitment materials to better educate candidates on the nature of the work. Actions not implemented: USPTO has not sought OPM approval to extend the probationary period for patent examiners to two years, developed a structured process for promotions after the first 6 or 12 months, or developed a pre-employment test to identify candidates with characteristics of successful examiners.
Implement a pre-employment test to assess English language oral and written communication skills for new patent examiners.	Partial	Actions implemented: Vacancy announcements include English language proficiency as a requirement; the automated application system was modified to include a writing sample, and in-person interviews are used to assess oral communication skills. To the extent possible, check references regarding communication skills. USPTO assessed the communication skills of all patent examiners hired from 2002 to 2004. Actions not implemented: The design and implementation of an automated pre-employment test was deferred due to a lack of funding, according to USPTO officials.

(Continued From Previous Page)

Capability initiatives	Status of actions planned through December 2004	Implementation details
Improve the selection and training of supervisory patent examiners.	Partial	Actions implemented: In November 2003, USPTO added proficiency in supervisory skills to the requirements for selection as a supervisory patent examiner. In 2004, applicants for supervisory positions were required to pass a certification examination. Some training modules, such as coaching and feedback, have been developed and offered. Actions not implemented: Although a full complement of training was to be in place by September 2004, some courses are being considered or under development, including various management development courses.
Create an Enterprise Training Division in the Office of Human Resources to centralize responsibility for legally required hard and soft skills, leadership, and other agencywide training as well as coordinating agencywide training policy and tracking funds spent on training.	Partial	Actions implemented: USPTO developed a draft action plan to create an Enterprise Training Division in November 2004 and began work to select a USPTO-wide learning management system, implement an e-learning pilot, and establish a development center. Actions not implemented: This initiative was to have been completed in 2003 but has not been implemented.
Quality		
Expand the current internal quality review program to include works in progress.	Implemented	Actions implemented: By October 2004 the Office of Patent Quality Assurance (OPQA) had expanded its quality reviews to include reviews of works in process. The results of these reviews will be reported in the agency's fiscal year 2005 accountability report.
Establish in each technology center some level of "second pair of eyes" reviews of work products.	Implemented	Actions implemented: By October 2004, managers for each technology center have designed and implemented quality assurance reviews that include some level of second pair of eyes review. In addition, results from OPQA reviews identify work units with high error rates for more intensive second pair of eyes reviews. Quality reviewers in each technology center also annually review work products for examiners as part of performance appraisals.
Augment periodic comprehensive customer surveys with surveys on specific applications (transactional surveys).	Implemented	Actions implemented: Adjust the timing of comprehensive surveys to every other year and conduct transactional surveys in the off years. The first transactional survey was conducted in 2003. Although USPTO has conducted surveys under generic approval from the Office of Management and Budget (OMB) since 1995, beginning in 2004, each survey must be reviewed and approved separately by OMB, a process that can take about 6 months. As a result, USPTO did not conduct a comprehensive survey in 2004.

(Continued From Previous Page)

Capability initiatives	Status of actions planned through December 2004	Implementation details
Evaluate the quality of searches conducted by patent examiners.	Partial	Actions implemented: OPQA is developing a plan and a set of criteria. Actions not implemented: OPQA reviews, both in process and end of examination (allowance) reviews, do not include an examination of the adequacy and comprehensiveness of the examiner's search. USPTO officials will pilot their plan and commence such reviews in fiscal year 2006.
Enhance the quality of the reviewable record of the examination process.	Partial	Actions implemented: Revised the interview summary form to provide a means for applicants and examiners to provide additional information on the content of interview. Revised the *Manual of Patent Examining Procedures* to reflect the change, and informally trained examiners. Examiners and applicants are strongly encouraged, but not required, to elaborate on decisions or the content of interviews. Actions not implemented: Examiners and applicants are not currently required to provide additional information regarding the content of interviews or elaborate on the reasons for decisions.
Legislative and rule changes		
Delete the requirement for physical surrender of the original patent when USPTO reissues a patent that was defective.	Implemented	Actions implemented: Implemented through rules changes that became effective in September 2004.
Certify the legal knowledge of patent attorneys and agents registering to practice before USPTO, and periodically recertify the legal knowledge of registered attorneys and agents and harmonize ethics standards with those used by states.	Partial	Actions implemented: In 2004, USPTO selected a contractor and began offering registration examinations electronically year-round. In December 2003, USPTO issued proposed rules to harmonize ethics and disciplinary actions with the requirements in place in most states, and obtained OMB approval for the ethics and disciplinary changes. USPTO will adjust questions on the registration examination as needed to reflect changes in patent law and practice. Actions not implemented: USPTO did not acquire the hardware and software to accept electronic registration forms due to funding limitations, according to USPTO officials. As of December 2004, USPTO had not implemented a continuing legal education program and recertification examination that was to have been in place.

(Continued From Previous Page)

Capability initiatives	Status of actions planned through December 2004	Implementation details
Evaluate whether to adopt a unity standard to harmonize U.S. examination practices with international standards and allow U.S. applicants to obtain a single patent on related claims that must currently be pursued in separate patent applications in the United States.	Partial	Actions implemented: In 2003, USPTO began a study of the changes needed to adopt a unity standard and sought public comment. Based on the comments received, USPTO consulted with stakeholders on other options. In 2004 the agency conducted a business impact analysis of four options that is currently under review. Actions not implemented: USPTO has not completed its analysis, reached a decision, or drafted and introduced implementing legislation.
Simplify adjustments to the length of time during which inventors can exclude others from making, using, or selling an invention, called the patent term.	Partial	Actions implemented: USPTO is drafting proposed legislation and obtaining administrative clearance to introduce the draft legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008.
Amend current legislation to permit individuals who have been assigned the rights to a patent, called the assignee, to sign an oath stating that the inventor is the original and first inventor of the invention described in the patent application.	Partial	Actions implemented: USPTO is drafting proposed legislation and obtaining administrative clearance to introduce the draft legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008.
Permit assignees to seek to broaden the claims in an application without the signature of the inventor.	Partial	Actions implemented: The change requires legislation to amend current law and subsequent rule making by USPTO. USPTO is drafting legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008. May be merged with the initiative above.
Correct an inconsistency regarding the treatment of unintentionally delayed submission of claims related to a previously filed provisional patent application.	Partial	Actions implemented: The change requires legislation to amend current law and subsequent rule making by USPTO. USPTO is drafting legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008.
Eliminate provisions that allow inventors to request publications of redacted versions of their applications and that require USPTO to publish applications for plant patents, which are typically granted in less time than the 18-month requirement to publish applications.	Partial	Actions implemented: USPTO is drafting proposed legislation and obtaining administrative clearance to introduce the draft legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008.

(Continued From Previous Page)

Capability initiatives	Status of actions planned through December 2004	Implementation details
Amend current legislation regarding certain limitations on an inventor's right to obtain a patent. Currently, inventors are barred from obtaining a patent on one or more claims that have already been patented by another or published in domestic or foreign applications, unless the applicant files within one year of publication. Because examiners have not determined whether claims in published applications are patentable, the initiative is to delete the bar as it relates to published domestic or foreign applications, and to retain the bar only as it relates to claims in patents that have been granted.	Partial	Actions implemented: The change requires legislation to amend current law and subsequent rule making by USPTO. USPTO is drafting legislation. Actions not implemented: Further action depends upon passage of the legislation, which is anticipated by 2008.

Source: GAO analysis of USPTO data.

Strategic Theme: Productivity

The agency's productivity initiatives are designed to accelerate the time to process patent applications by offering a range of examination options to applicants, reducing the responsibilities examiners have for searches of literature related to applications (pendency and accelerated examination), and creating financial incentives for applicants as well as an improved postgrant review process (shared responsibility).

Table 9: USPTO Productivity Initiatives

Productivity initiatives	Status of actions planned through December 2004	Implementation details
Fee restructuring	Partial	Actions implemented: For 2005 and 2006, Congress passed legislation allowing USPTO to increase and restructure the fees it charges applicants to include separate components for filing the application, the examiner's search of relevant literature, and the review of specifications for the proposed invention to determine their patentability. In addition the legislation grants USPTO the authority to refund portions of the domestic and international application fees under certain circumstances and to charge higher fees for applications with claims and drawings for the proposed invention that exceed 100 pages. Actions not implemented: USPTO has not issued proposed or final rules to allow for refunding domestic fees.

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Productivity initiatives	Status of actions planned through December 2004	Implementation details
Offer patent applicants a choice of up to five examination options based in part on the ability to rely on searches conducted by other entities and revise fees accordingly.	Not implemented	Progress to date: Preliminary planning only. Actions not implemented: This initiative is related to the flexibility and work-sharing initiatives, and implementation depends upon access to additional funds, according to USPTO officials. In 2005, USPTO will continue efforts to select contractors and negotiate bi- and multilateral agreements with other intellectual property offices.
Offer applicants seeking patents the option for an accelerated examination in exchange for payment of a fee.	Not implemented	Actions implemented: This initiative seeks to expand the option for accelerated examination to applicants for all types of patents. The option is currently available to applicants seeking utility patents but is not widely used. Actions not implemented: USPTO has not conducted a pilot program or drafted proposed rules or legislation.
Revise postgrant review procedures to allow for greater public input.	Not implemented	Actions implemented: USPTO drafted proposed legislation that was introduced in 2004 but not passed. House members of both parties have indicated they will introduce the legislation for consideration by the current session. Actions not implemented: Because the legislation was not enacted, no implementing rules or other actions were taken. The legislation and rule changes are expected to be in place by 2008.

Source: GAO analysis of USPTO data.

Strategic Theme: Agility

To become an organization that responds quickly and efficiently to changes in the economy, the marketplace, and the nature and size of workloads, USPTO developed initiatives to implement electronic beginning-to-end processing of patents (e-government), increase reliance on the private sector or other intellectual property offices (flexibility), and streamline international patent systems and strengthen protection of patent rights as well as share search results with other international patent offices (global development).

Table 10: USPTO Agility Initiatives

Agility initiatives	Status of actions planned through December 2004	Implementation details
Establish an information technology security program for fully certifying and accrediting the security of automated information systems.	Implemented	Actions implemented: In 2003 and 2004, USPTO achieved full accreditation and certification for its seven mission critical systems, its classified system, and its eight business essential systems. External reviewers noted that many of the risks they identified could be addressed in the course of routine administration, although some, such as development of policy statements and monitoring programs, would need strategic planning and resources to address. In 2004, the Office of the Inspector General removed information security as a material weakness at USPTO. The agency has an ongoing program to annually complete security self-assessments of major systems including the use of scanning tools to identify weaknesses and intrusion detection systems. In 2003 and 2004, all USPTO staff and contractors completed the annual security training requirements.
Implement an operational system to process patent applications electronically, including electronic image capture of all incoming and outgoing paper documents.	Partial	Actions implemented: Using an incremental approach, USPTO adopted an image-based electronic-processing system for examiners. In fiscal year 2004, examiners processed almost 90 percent of patent applications electronically. In 2003, all paper files of pending applications and newly received applications were scanned into image files, and applicants could access their files over the Internet. In 2004, the public could access all publicly available patent application files via the Internet. Actions not implemented: USPTO did not achieve the ability to exchange electronic documents with the European Patent Office (EPO) that had been anticipated. Some tasks were eliminated due to both technical changes in the electronic systems used by each office and budgetary concerns. However, USPTO is still working with EPO to finalize security and protocol between the two servers. In addition, USPTO is waiting for EPO to deliver software that creates a submission package in compliance with USPTO's national electronic filing standards.
Develop an automated information system to support a postgrant patent review process.	Partial	Actions implemented: Rules have been changed to generally allow for electronically filing of documents and for adopting streamlined processes implemented since 1998. In 2002, USPTO began a pilot program and trained additional judges in the streamlined procedures. Actions not implemented: USPTO has not defined e-records management schedules, completed the design for basic electronic- processing, or implemented full electronic-processing capabilities, such as text searching of all documents and the ability to receive, file, store, and view multimedia files.

(Continued From Previous Page)

Agility initiatives	Status of actions planned through December 2004	Implementation details
Ensure continuity in the availability of business critical data in the event of a catastrophic failure of the agency's data center.	Partial	Actions implemented: USPTO has completed its analysis of the impact to its business operations from the catastrophic loss of data and efforts to recover essential data. Specifically, USPTO has identified critical services and the associated applications required to provide those services; assessed how critical applications are to business operations; compiled recovery priority lists for each line of business; and compiled vendor cost data to support its plan. Actions not implemented: USPTO has not had sufficient funding to acquire the hardware, software, staff, and facilities for a secondary data center. Acquisition of the secondary data center, scheduled for operation in June 2004, has been postponed until 2005 and remains dependent on adequate funding. Until USPTO acquires funding for the secondary data center, the agency will continue to back up its critical data on a daily basis to tapes that are stored in a separate location.
Promote substantive patent law harmonization in the framework of the World Intellectual Property Organization (WIPO), resolve major issues, and pursue harmonization goals to strengthen the rights of American intellectual property owners by making it easier to obtain international protection for their inventions.	Partial	Actions implemented: Substantive patent treaty discussions were held in May 2004 during the meeting of the WIPO Standing Committee on the Law of Patents in Geneva. Major issues addressed included the first-to-file (European standard) versus the first-to-invent (U.S. standard), subject matter eligibility, and access to genetic resources. Because of the sensitive and confidential nature of this initiative, specific details were not published and no date was given for implementation.
Pursue bi- or multilateral agreements with other intellectual property offices to share patent search results.	Partial	Actions implemented: Pilot programs to compare search results were completed in 2003 and 2004 with the Japan and European Patent Offices and with patent offices in Australia and the United Kingdom. Analysis of the results was hampered because the pilot programs did not allow for sharing of search histories. A new pilot is ongoing that includes sharing information on the areas searched and on the queries used. USPTO is working to effect legal changes that would facilitate the use of searches conducted by other intellectual property offices. No date was given for completion of the ongoing pilot or implementation of search sharing and legislative changes.
Accelerate Patent Cooperation Treaty (PCT) reform efforts, focusing on USPTO's proposal to simplify processing.	Partial	Actions implemented: USPTO indicated that some reform procedures were adopted in January 2004. Because of the sensitive and confidential nature of this initiative, specific details were not published and no date was given for implementation. USPTO indicated it would continue to press for further reforms at the PCT Reform Working Group meeting in May 2005.

(Continued From Previous Page)

Agility initiatives	Status of actions planned through December 2004	Implementation details
Rely on private sector to classify patent documents.	Not implemented	Progress to date: In 2002 and 2003, USPTO began to identify potential contractors, obtained OMB agreement to contract the search activities, and began to define the contract requirements. According to agency officials, funding constraints halted further action. The efforts were planned for implementation in the spring of 2004. Update: In 2005, USPTO will assign a new team to determine what changes, if any, are needed because of the delayed implementation.
Rely on private sector to support national application and Patent Cooperation Treaty search activities.	Not implemented	Progress to date: In 2002 and 2003, USPTO began to identify potential contractors, obtained OMB agreement to contract the search activities, and began to define the contract requirements. According to agency officials, funding constraints halted further action. The efforts were planned for implementation in the spring of 2004. Update: In 2005, USPTO will assign a new team to determine what changes, if any, are needed because of the delayed implementation.
Rely on private sector to transition to a new patent classification system harmonized with the systems used by the Japan and European Patent Offices.	Not implemented	Progress to date: In 2002 and 2003, USPTO began to identify potential contractors, obtained OMB agreement to contract the search activities, obtained legal advice, and began to define the contract requirements. According to agency officials, funding constraints halted further action. The efforts were planned for implementation in the spring of 2004. Update: In 2005, USPTO will assign a new team to determine what changes, if any, are needed because of the delayed implementation.
Develop stringent conflict of interest clauses for search firms rather than a program to certify search firms.	Not implemented	Progress to date: In 2002 and 2003, USPTO began to identify potential contractors, obtained OMB agreement to contract the search activities, and began to define the contract requirements. According to agency officials, funding constraints halted further action. The efforts were planned for implementation in the spring of 2004. Update: In December 2004, legislation passed by Congress set new requirements for outsourcing searching functions, which no longer includes certification of search firms, but instead requires stringent conflict of interest clauses.

Source: GAO analysis of USPTO data.

Appendix IV

GAO Contact and Staff Acknowledgments

GAO Contact

Anu K. Mittal, (202) 512-3841

Staff Acknowledgments

In addition to the contact named above, Cheryl Williams, Vondalee R. Hunt, Lynn Musser, Cynthia Norris, and Ilga Semeiks made significant contributions to this report. Allen Chen, Amy Dingler, Omari Norman, Don Pless, and Greg Wilmoth also contributed to this report.

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ATTACHMENT 2

United States Government Accountability Office

GAO

Report to Congressional Committees

June 2005

INTELLECTUAL PROPERTY

Key Processes for Managing Patent Automation Strategy Need Strengthening

G A O

Accountability ★ Integrity ★ Reliability

GAO-05-336

GAO
Accountability•Integrity•Reliability

Highlights

Highlights of GAO-05-336, a report to congressional committees

Why GAO Did This Study

The volume and complexity of patent applications to the U.S. Patent and Trademark Office (USPTO) have increased significantly in recent years, lengthening the time needed to process patents. Annual applications have grown from about 185,000 to over 350,000 in the last 10 years and are projected to exceed 450,000 by 2009 (see figure). Coupled with this growth is a backlog of about 750,000 applications.

USPTO has long recognized the need to automate its patent processing and, over the past two decades, has been engaged in various automation projects. Accordingly, GAO was asked to, among other things, assess progress to date and any problems facing USPTO as it develops the capability to efficiently handle patent information electronically.

What GAO Recommends

To better position USPTO to improve its patent process through the use of automation, GAO is making recommendations to the Secretary of Commerce that address the agency's management of its patent automation strategy and related information technology investments. In commenting on this report, USPTO generally agreed with our findings, conclusions, and recommendations. However, the agency only partially agreed with several material aspects of our assessment.

www.gao.gov/cgi-bin/getrpt?GAO-05-336.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Linda Koontz at (202) 512-6240 or koontzl@gao.gov.

June 2005

INTELLECTUAL PROPERTY

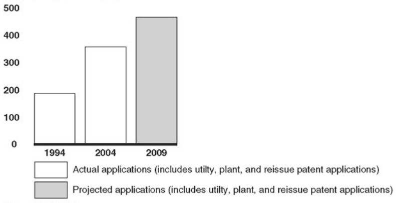
Key Processes for Managing Patent Automation Strategy Need Strengthening

What GAO Found

As part of its strategy to achieve a paperless, electronic patent process, USPTO had planned to deliver an operational patent system by October 2004. It has been able to deliver important capabilities, such as allowing patent applicants to electronically file and view the status of their patent applications and the public to search published patents. Nonetheless, after spending over $1 billion on its efforts from 1983 through 2004, the agency's existing automation has not provided the fully integrated, electronic patent process articulated in its automation plans, and when and how this process will be achieved is uncertain. Key systems that USPTO is relying on to help reach this goal—an electronic application filing system and a document imaging system—have not provided capabilities that are essential to operating in a fully electronic environment. Contributing to this situation is that the agency took an ad hoc approach to planning and managing its implementation of these systems, in which it lacked effective analysis of system requirements, alternatives, and costs; made acquisition decisions based on management judgment; and acquired software that did not meet its needs.

USPTO's ineffective planning and management of its patent automation initiatives, in large measure, can be attributed to enterprise-level, systemic weaknesses in its information technology investment management processes. Although the agency had begun instituting essential investment management mechanisms, such as its enterprise architecture framework, it had not yet finalized its capital planning and investment control process nor established necessary linkages between the process and its architecture to guide the development and implementation of its information technology. The Under Secretary of Commerce for Intellectual Property and USPTO's chief information officer acknowledged the need for improvement, but specific plans for resolving problems have not yet been developed.

Actual and Projected Patent Applications, Fiscal Years 1994–2009
Applications in thousands



Source: USPTO data.

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Abbreviations

APS	Automated Patent System
OCIO	Office of Chief Information Officer
OCR	optical character recognition
PDF	portable document format
SIRA	Search and Information Resources Administration
TEAM	Tools for Electronic Application Management
USPTO	United States Patent and Trademark Office

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United States Government Accountability Office
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June 17, 2005

The Honorable Frank R. Wolf
Chairman
Subcommittee on Science, the Departments of State,
Justice, and Commerce, and Related Agencies
Committee on Appropriations
House of Representatives

The Honorable F. James Sensenbrenner, Jr.
Chairman
Committee on the Judiciary
House of Representatives

The United States Patent and Trademark Office (USPTO) helps to promote industrial and technological progress in the United States and to strengthen the national economy by administering the laws relating to patents and trademarks. A critical part of the agency's mission is to examine patent applications and issue patents. However, the rapid growth in both the volume and complexity of applications to USPTO has lengthened the time necessary to process patents and raised concerns about the quality of the patents that are issued. The number of patent applications filed annually has increased 91 percent over the last 10 years, from about 185,000 in 1994 to over 350,000 in 2004. Coupled with this growing workload is a 28-month backlog of approximately 750,000 applications.

USPTO has long recognized the need to improve its patent processing capability and, for the past two decades, has engaged in various efforts to automate its patent process. In light of the agency's actions, at your request, this report describes USPTO's strategy for automating its patent process and assesses its progress and any problems faced in developing and using electronic information and systems to achieve this capability. We plan to issue a separate report that will address the agency's progress in achieving its strategic milestones and maintaining a qualified workforce.[1]

To accomplish this objective, we reviewed USPTO's current and selected past initiatives to develop and implement automated patent processing capabilities. We analyzed programmatic and technical documentation describing the agency's patent process, current electronic processing capabilities, and plans for future automation. We also evaluated available project management documentation, such as project plans, time lines, and status reports, to determine its progress in implementing a fully automated patent process. In addition, we assessed the agency's consideration of key information technology investment management processes and practices in planning and managing the patent automation initiatives. Further, we reviewed agency information on the cost of its automation efforts; however, we did not verify the accuracy of the cost data. To supplement our analysis, we interviewed senior patent officials, including the Deputy Commissioner for Patent Resources Planning and the USPTO chief information officer and, as part of a series of focus groups, selected patent examiners regarding the implementation and use of the systems supporting USPTO's patent process. We also discussed the patent automation efforts with the Under Secretary of Commerce for Intellectual Property (who serves as the director of USPTO). We conducted our study from June 2004 through April 2005 in accordance with generally accepted government auditing standards. Appendix I contains a detailed discussion of the scope and methodology of our review.

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[1] GAO, *Intellectual Property: USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain*, GAO-05-720 (Washington, D.C.: June 17, 2005).

Results in Brief

USPTO is pursuing a long-standing strategy to implement a paperless, electronic patent process, with the goal of replacing the manual processing of applications with capabilities for electronically researching patent information and viewing and manipulating application text throughout all processing phases. To achieve this electronic process, the agency plans to integrate its existing systems that enable capabilities such as electronic filing of applications with new document imaging and text processing and sophisticated document management and workflow capabilities. As part of its 21st Century Strategic Plan, issued in 2002, the agency announced an acceleration of its goal of delivering an operational system to electronically process patents—from fiscal year 2006 to October 1, 2004.

USPTO has made progress in delivering functionality through information systems that it has implemented, such as electronic filing and patent application classification and search, as well as Internet access for patent applicants and the public, respectively, to view the status of their applications and to search existing published patents. Nonetheless, collectively, these automated functions have not provided the fully integrated end-to-end patent processing capability articulated in USPTO's automation plans. Two of the primary systems that the agency is relying on to enhance its capabilities—its electronic filing system and a document imaging system that it acquired from the European Patent Office called Image File Wrapper—have not yielded processing improvements that the agency had deemed essential to operate successfully in an electronic environment. Specifically, patent filers have stated that the electronic filing system is cumbersome, time-consuming, and costly, and does not meet their business and technical needs; thus, fewer than 2 percent of all patent applications are submitted to USPTO electronically. In addition, the Image File Wrapper has experienced performance problems and, according to patent officials, has not provided many of the capabilities deemed essential to eliminating manual actions and improving worker productivity. Contributing to this situation is that the agency took an ad hoc approach to planning and managing its implementation of these systems. Information technology best practices emphasize the need for agencies to undertake projects in a disciplined manner based on well-established business cases that articulate agreed-upon business and technical requirements; include analyses of project alternatives, costs, and benefits; and include measures for tracking project costs, schedules, and performance through their life cycle. However, patent officials did not rely on such critical measures to guide their implementation of these key initiatives.

USPTO's ineffective planning and management of its patent automation projects, in large measure, can be attributed to enterprise-level, systemic weaknesses in the agency's overall information technology investment management processes. A key premise of the Clinger-Cohen Act of 1996[2] is that agencies should have established processes, such as capital planning and investment controls, to help ensure that information technology projects are implemented at acceptable costs and within reasonable and expected time frames, and contribute to tangible, observable improvements in mission performance. In addition, as our Enterprise Architecture Framework[3] stresses, information technology projects should show evidence of compliance with the organization's architecture. Although USPTO had begun instituting certain essential information technology investment management mechanisms, it had not yet finalized its capital planning and investment control process nor established necessary linkages between the process and its enterprise architecture to ensure that projects will comply with the architecture. Further, a study commissioned by the agency in 2004 found that its Office of Chief Information Officer was not organized to help accomplish the automation goals set forth in its strategic plan and that the agency's investment management processes did not ensure appropriate reviews of automation initiatives. As a result, USPTO had not rigorously assessed its patent systems' compliance with the enterprise architecture, and it lacked reliable experience-based data to consistently demonstrate the costs and benefits of its systems.

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[2] 40 U.S.C. sec. 11312.

[3] GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management* (Version 1.1), GAO-03-584G (Washington, D.C.: April 2003).

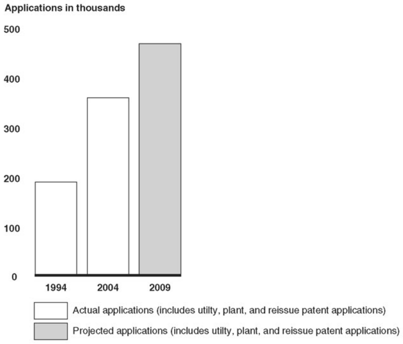
In light of the problems that USPTO has encountered with its existing capabilities, we are recommending that the agency, before proceeding with any new patent automation initiatives, (1) reassess, and, where necessary, revise its approach for implementing and achieving effective uses of information systems supporting a fully automated patent process; (2) establish disciplined processes for planning and managing the development of patent systems based on well-established business cases; and (3) fully institute and enforce information technology investment management processes and practices to ensure that its automation initiatives support the agency's mission and are aligned with its enterprise architecture.

In its written comments on a draft of our report (reprinted in app. II), USPTO generally agreed with our findings, conclusions, and recommendations. The agency acknowledged weaknesses in its processes used to manage patent automation and agreed with the need for key improvements, such as (1) developing architectural linkages to the planning process, (2) implementing a capital planning and investment control guide, and (3) completing planned organizational changes. Nonetheless, the agency stated that it only partially agreed with several material aspects of our assessment. For example, the agency pointed to our awareness of it having initiated a review of the architectural linkages to its investments and key decision-making processes. However, during our study, agency officials did not inform us of any specific actions that had been taken in this regard. As the agency moves forward with actions to improve its patent automation, having firmly established and enforced investment management practices will be essential to achieving more effective use of its information technology.

Background

A patent is a property right granted by the U.S. government to an inventor who secures, generally for 20 years from the date of initial application in the United States, his or her exclusive right to make, use, offer for sale, or sell the invention in exchange for disclosing it.[4] As indicated in figure 1, the number of patent filings to USPTO continues to grow and, by 2009, the agency is projecting receipt of over 450,000 patent applications annually.

Figure 1: USPTO Actual and Projected Patent Applications, Fiscal Years 1994-2009



Source: USPTO data.

USPTO has repeatedly cited the growing workload of patent applications and the difficulty in managing the volumes of paper associated with patent processing as impediments to carrying out its mission.

Patent processing essentially involves three phases: pre-examination, examination, and post-examination. The process begins when an applicant files a patent application and pays a filing fee. As part of the pre-examination phase, USPTO staff document receipt of the application and process the application fee, scan and convert the paper documents to electronic format, and conduct an initial review of the application and classify it by subject matter. During the subsequent examination phase, the application is assigned to a patent examiner with expertise in the subject area,[5] who searches existing U.S. and foreign patents, journals, and other literature (called "prior art") and sometimes contacts the applicant to resolve questions and obtain additional information to determine whether the proposed invention can be patented.[6] Examiners document their determinations on the applications in formal correspondence, referred to as office actions. Applicants may abandon their applications at any time during this process. After the examiner has determined that a patent is warranted, a supervisor reviews and approves the determination and the applicant is informed of the outcome. The application then enters the post-examination phase. Upon payment of an "issue fee," a patent is granted and published. To keep the patent active, the patentee must pay maintenance fees at 3.5 years, 7.5 years, and 11.5 years. Historically, the time from the date that a patent application is filed to the date that the patent is either granted or the application is abandoned has been called "patent pendency." Figure 2 summarizes USPTO's patent process.

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[4] According to 35 U.S.C. sec. 154(a)(1), a patentee may also exclude others from importing the patented invention into the United States.

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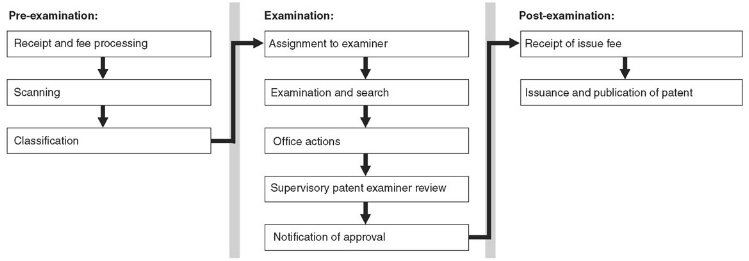
[5] USPTO has eight technology centers that define its subject areas as follows: Biotechnology and Organic Chemistry; Chemical and Materials Engineering; Computer Architecture, Software, and Information Security; Communications; Semiconductors, Electrical and Optical Systems and Components; Designs for Articles of Manufacture; Transportation, Construction, Electronic Commerce, Agriculture, National Security and License and Review; Mechanical Engineering, Manufacturing, and Products.

[6] A proposed invention is patentable if it is a new or useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.

Figure 2: USPTO's Patent Process



Source: USPTO.

In 1999, Congress gave USPTO broad responsibility for managing its operations and controlling its budget allocations and expenditures, personnel decisions and processes, procurement, and information technology operations.[7] USPTO's Search and Information Resources Administration (SIRA) within the Office of Patent Resources Planning, along with its Office of Chief Information Officer (OCIO), are responsible for ensuring that the agency's goal of providing an automated patent process is met. SIRA is responsible for identifying patent processing business needs, ensuring that the systems developed meet those needs, and providing program resources. OCIO determines how best to use information technology to fulfill the identified business needs and is responsible for the acquisition, development, and integration of the information systems.

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[7] The American Inventors Protection Act of 1999, 35 U.S.C. sec. 1(a) gave USPTO greater flexibility and independence for decisions regarding the management and administration of its operation, while the Secretary of Commerce retained policy direction. In addition, 35 U.S.C. sec. 2(b)(2)(F) empowered the USPTO director to establish regulations that provide for the development of a performance-based process that includes quantitative and qualitative measures and standards for evaluating cost-effectiveness and is consistent with principles of impartiality and competitiveness.

Because of long-standing concerns about the increasing volume and complexity of patent applications, USPTO has been undertaking projects to automate its patent process for about the past two decades. One of the agency's most substantial undertakings was the Automated Patent System (APS)—a project begun in 1983 with the intent of automating all aspects of the paper-intensive patent process. With this system, USPTO anticipated significant improvements in patent quality and productivity. APS was to be deployed in 1990, maintained through 2002, and, when completed, consist of five integrated subsystems that would (1) fully automate incoming patent applications; (2) allow examiners to electronically search the text of granted U.S. patents and access selected abstracts of foreign patents; (3) scan and allow examiners to retrieve, display, and print images of U.S. patents; (4) help examiners classify patents; and (5) support on-demand printing of copies of patents.

In reporting on APS more than 10 years following its inception, we noted that USPTO had deployed and was operating and maintaining certain parts of the system, supporting text search, limited document imaging, order-entry and patent printing, and classification activities.[8] However, it had not yet developed the system that was expected to fully automate incoming applications and the management of these applications as they moved through USPTO, and the estimated date for full deployment of APS had been delayed 7 years, to 1997.

Our report raised concerns about USPTO's ability to adequately plan and manage this major project, pointing out that the agency's processes for exercising effective management control over APS were weak. We noted that the agency lacked reliable, experience-based data to show that patent quality had improved and expected benefits were being achieved and its officials were relying on management judgment alone in setting APS development and deployment priorities. In light of these concerns, we recommended to the Secretary of Commerce that USPTO establish a process for identifying and measuring expected benefits to users of the system, implement a systematic and repeatable process for estimating the system's costs, and monitor progress against baselines. USPTO agreed with the need for such measures.

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[8] GAO, *Patent and Trademark Office: Key Processes for Managing Automated Patent System Development Are Weak*, GAO/AIMD-93-15 (Washington, D.C.: Sept. 30, 1993).

Through 2002, the agency continued to enhance its capabilities enabling examiners to search patent images and text, and upgraded its patent application classification and tracking systems.[9] It also began providing electronic bibliographic information from patents to the public. Nonetheless, USPTO never fully developed and deployed APS to achieve the integrated, end-to-end patent processing system that it envisioned. The agency reported spending approximately $1 billion on the initiative from 1983 through 2002.[10]

In 1998, the agency added to its automated capability by implementing an Internet-based electronic filing system, enabling applicants to submit their applications online. It further enhanced the electronic filing system in 2002, and again in 2004. USPTO reported spending a total of $10 million for this system.

USPTO Continues to Pursue a Fully Automated Patent Process, but Is Not Effectively Managing Its Strategy for Achieving This Capability

Recognizing that growth in the number and complexity of patent applications has outpaced its ability to meet demands and effectively manage its workload in a paper-based environment, USPTO has continued to pursue a strategic agenda emphasizing paperless, end-to-end, automated patent processing, as was its intent with APS. However, while progress has been made, the agency has not yet achieved a fully electronic patent processing capability. Key systems that USPTO is relying on to help achieve this capability have not yielded essential processing improvements, in part resulting from the agency's ad hoc approach to planning and managing their implementation. Contributing to this situation is that USPTO has not yet fully instituted disciplined processes and practices for managing its information technology investments.

USPTO's Strategy Called for a Fully Electronic Patent Process

As part of its automation strategy, USPTO planned to develop and integrate multiple systems that are intended to move all of its critical patent processing components to an electronic business environment. To support this strategy, in 2001, the agency undertook its Tools for Electronic Application Management (TEAM) automation project with the intent of delivering an end-to-end capability to process patent applications electronically by fiscal year 2006. TEAM was to support the entire patent application process in electronic mode, beginning with the filing of an application and proceeding through pre-examination, examination, and post-examination to electronic records archiving.

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[9] The initial deployment of USPTO's patent tracking system occurred in 1980. This system provides workflow tracking, status reporting, and examiner production information.

[10] The reported cost included system enhancements and maintenance through the end of the project's life cycle in 2002.

Under the TEAM concept, the agency had planned to integrate its existing electronic filing system and the classification and search capabilities from the earlier APS project with new document management and workflow capabilities, and with image- and text-based processing[11] of patent applications to achieve a sophisticated means of handling documents and tracking patent applications throughout the examination process. By implementing image- and text-based capabilities, USPTO had anticipated that patent examiners would be able to view and process applications online, as well as manipulate and annotate text within a patent application, thus eliminating manual functions and improving processing accuracy, reliability, and productivity, as well as the quality of the patents that are granted.

In 2002, USPTO altered its approach to accomplishing the patent automation with the issuance of its 21st Century Strategic Plan.[12] Developed partly in response to a recognized need to improve patent quality, aggressively implement electronic government,[13] and reduce the number of patent applications pending at any one time, the strategic plan identified, among other factors, the agency's high-level information technology goals for fully automating the patent process as part of an aggressive 5-year modernization effort. The plan incorporated the automation concepts from the TEAM project, but announced an accelerated goal of delivering an operational system to electronically process patent applications earlier than had been scheduled under TEAM—by October 1, 2004.

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[11] *Image-based processing* uses a graphic representation of documents produced by scanning paper documents or by converting electronic documents into images. To transform image content into text, optical character recognition (OCR) software is used to derive text from the image. OCR can convert image documents to hidden text, which is searchable. In *text-based processing*, the words and sentences in the document are retained as text and can be stored, processed, and retrieved by a document management system. Unlike image-based processing, text-based processing allows the text to be searched and extracted.

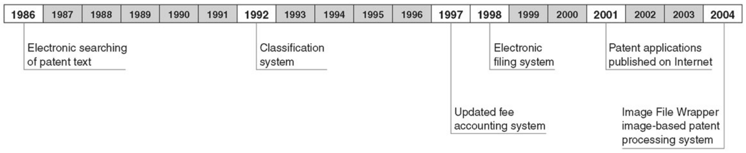
[12] USPTO's *21st Century Strategic Plan* was originally released in 2002 and updated in 2003.

[13] Electronic government refers to the use of information technology to enhance the access to and delivery of government information and service to citizens, business partners, and employees, and among agencies at all levels of government.

Progress Made, but Ad Hoc Implementation of Key Systems Has Prevented Achieving Full Electronic Processing of Patent Applications

In carrying out its patent automation plans, USPTO has made progress toward delivering important processing capabilities through the various information systems that it has implemented. For example, an automated search capability, available since 1986, has eliminated the need for patent examiners to manually search for prior art in paper files, and the classification and fee accounting capabilities have helped with assigning applications to the correct subject areas and with managing collections of applicable fees. In addition, using the electronic filing system that has existed since 1998, applicants can file their applications with the agency via the Internet. Also, using the Internet, patent applicants can review the status of their applications online and the public can electronically access and search existing published patents. Further, as a result of an imaging system implemented in August 2004, known as the Image File Wrapper, USPTO currently has the capability to scan patent applications and related documents, which can then be stored in a database and retrieved and reviewed online. Figure 3 illustrates the agency's progress in implementing its automated patent functions.

Figure 3: USPTO's Patent Automation Progress


1986
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Electronic searching of patent text
Classification system
Electronic filing system
Patent applications published on Internet
Updated fee accounting system
Image File Wrapper image-based patent processing system

Source: USPTO.

Nonetheless, even with the progress that has been made, collectively, USPTO's automated functions have fallen short of providing the fully integrated, electronic patent processing capability articulated in the agency's automation plans. Two of the key systems that it is relying on to further enhance its capabilities—the electronic filing system and the Image File Wrapper—have not yielded the processing improvements that the agency has deemed essential to successfully operate in a fully integrated, electronic environment.

Specifically, in implementing its electronic filing system in 1998, USPTO had projected significant increases in processing efficiencies and quality by providing patent applicants the capability to file online, thus alleviating the need for them to send paper applications to the agency or for patent office staff to manually key application data into the various processing systems. However, even after enhancements in 2002 and 2004, the electronic filing system has not produced the level of usage among patent filers that the agency had anticipated. While USPTO's preliminary justification for acquiring the electronic filing system had projected an estimated usage rate of 30 percent in fiscal year 2004, patent officials reported that, as of April 2005, fewer than 2 percent of all patent applications were being submitted to the agency via this system. As a result, anticipated processing efficiencies and quality improvements through eliminating the manual re-keying of application data have not yet been realized.

In September 2004, USPTO convened a forum of senior officials representing the largest U.S. corporate and patent law firm filers to identify causes of patent applicants' dissatisfaction with the electronic filing system and determine how to increase the number of patents being filed electronically. According to the report resulting from this forum, the majority of participants viewed the system as cumbersome, time-consuming, costly, inherently risky, and lacking a business case to justify its usage. Specifically, among the barriers to system usage that the participants identified were (1) users' lack of a perceived benefit from filing applications electronically, (2) liability concerns associated with filers' unsuccessful use of the system or unsuccessful transmission of patent applications to USPTO, and (3) significant disruptions to filers' normal office/corporate processes and workflow caused by factors such as difficulty in using the automated tools and the inability to download necessary software through firewalls.

Further, forum participants identified features that they considered critical to increasing their use of the electronic filing system. These included implementing a more user-friendly system supported by Web-based processes; introducing a system that accepts portable document format

(PDF) files;[14] and enabling electronic filing of all documents, versus requiring paper filings of certain parts of the application, as is necessary with the current system. As incentives to increasing system usage, the participants suggested, among other strategies, that USPTO make electronic filings of applications a priority over paper filings, reduce the fee for electronic filings, and confirm the date on which the agency receives electronic applications.

Several concerns raised during the forum mirrored those that USPTO had earlier identified in a 1997 analysis of a prototype for electronic filing. However, as of April 2005, the agency had not yet completed plans to show how they would address the concerns regarding use of the electronic filing system.

Beyond electronic filing, the Image File Wrapper also has not resulted in critical patent processing improvements. Patent officials explained that, to meet the accelerated date for delivering an operational system as outlined in the strategic plan, the agency had decided in 2002 to acquire and use a document-imaging system owned by the European Patent Office, called ePhoenix, rather than develop the integrated patent processing system that had been described in the agency's automation plans. The officials stated that the director, at that time, had considered ePhoenix to be the most appropriate solution for further implementing USPTO's electronic patent processing capabilities given (1) pressures from Congress and from customers and stakeholders to implement an electronic patent processing system more quickly than originally planned and (2) the agency's impending move to its new facility in Alexandria, Virginia, which did not include provisions for transferring and storing paper patent applications.[15]

Accordingly, in November 2002, patent officials had signed a memorandum of agreement with the European Patent Office, in which that office agreed to provide USPTO with a license to use its patent processing software and to provide technical assistance in customizing the software to meet USPTO's needs. In turn, USPTO agreed to reimburse the European Patent

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[14] PDF is a file format that helps reduce errors when files are transferred from one user to another. A PDF file can contain fonts, images, printing instructions, keywords, and other information related to document production.

[15] In December 2003, USPTO began relocating its headquarters from Arlington (Crystal City), Virginia, to Alexandria, Virginia, with the intent of consolidating all of its major operations in a central facility. The agency anticipates completing this move in approximately July 2005.

Office for the cost of modifying the software. It began deploying the system—which it renamed Image File Wrapper—in July 2003 and completed implementation in August 2004, at a reported total cost of approximately $14 million.[16]

The system includes image technology for storage and maintenance of records associated with patent applications and currently provides the capability to scan each page of a submitted paper application and convert the pages into electronic images. According to comments made by patent examiners in a majority of the focus groups that we conducted, the system has provided them with the ability to easily access patent applications and related information. In addition, patent officials stated that the system has enabled multiple users to simultaneously access patent applications.

However, patent officials acknowledged that the system has experienced performance and usability problems. Specifically, in speaking about the system's performance, patent officials and agency documentation stated that, after its implementation, the Image File Wrapper had been unavailable for extended periods of time or had experienced slow response times, resulting in decreased productivity. In commenting on this matter, the USPTO director stated that the system's performance has improved over the last 6 months. Further, in discussing the system's performance, OCIO and patent officials acknowledged this system problem, and told us that they had recently taken measures to alleviate its impact by, for example, developing a backup tool, which can store images of an examiner's most recent applications so that the applications can be accessed when the examiner cannot use the Image File Wrapper. However, given the recent (February 2005) implementation of this tool, the officials were not able to show any quantitative benefits from its use.

Regarding the usability of the system, patent officials and focus group results indicated that the Image File Wrapper does not fully meet processing needs. Specifically, the officials stated that, as an image-based system, the Image File Wrapper does not fully enable patent examiners to electronically search, manipulate, or track and log changes to application text, which are key processing features emphasized in the agency's automation plans. The agency's documentation also indicated that patent examiners have to print images to paper to perform certain functions such as signing their names to office actions. The examiners commented that a limited capability to convert images to text, which was intended to assist them in copying and reusing information contained in patent files, is error-prone, contributing to their need to download and print the applications for review. In addition, examiners in the focus groups expressed concerns about the Image File Wrapper's capability to manage their workload and route documents to and from examiners, noting that these capabilities are confusing and difficult to use. Further, because the office's legacy systems are not integrated with the Image File Wrapper, examiners are required to manually print correspondence from these systems, which then must be scanned into the Image File Wrapper in order to be included as part of an applicant's electronic file.

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[16] The $14 million represents a compilation of costs—provided by USPTO—for the Image File Wrapper system.

Patent and OCIO officials largely attributed the system's performance and usability problems to the agency's use of the software that it acquired from the European Patent Office. They indicated that the original design of the ePhoenix system had not been compatible with USPTO's technical platform for electronic patent processing. Specifically, they stated that the European Patent Office had designed the system to support only the printing of files for subsequent manual reviews, rather than for electronic review and processing. The officials also stated that the system had not been designed for integration with other legacy systems or to incorporate additional capabilities, such as text processing, with the existing imaging capability. Further, an official of the European Patent Office noted that ePhoenix had supported their office's much smaller volume of patent applications.[17] Thus, with USPTO's patent application workload being approximately twice as large as that of its European counterpart, the agency placed greater stress on the system than it was originally designed to accommodate. OCIO officials overseeing the Image File Wrapper told us that, although they had tested certain aspects of the system's capability, many of the problems encountered in using the system were not revealed until after the system was deployed and operational.

The European Patent Office official serving as liaison to USPTO identified similar technical problems with the Image File Wrapper. The official acknowledged that the version of the ePhoenix software that USPTO had acquired did not provide some of the capabilities that the agency wanted, such as text processing. He added that the European Patent Office was developing a newer version of the software that would include text- and image-based processing capabilities. At the time of our discussion, the official said that USPTO officials had not informed them of their plans to use the newer version of the software.

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[17] Over the past 2 years, the European Patent Office reported processing about 160,000 to 170,000 patent applications per year using ePhoenix.

Patent and OCIO officials acknowledged the problems with the Image File Wrapper and that the agency had acquired ePhoenix, although senior officials were aware that the original design of the system had not been compatible with USPTO's technological platform for electronic patent processing. They stated that, despite knowing about the many problems and risks associated with using the software, the agency had nonetheless proceeded with this initiative because senior officials, including the former USPTO director, had stressed their preference for using ePhoenix in order to expedite the implementation of a system. The officials also acknowledged that management judgment, rather than a rigorous analysis of costs, benefits, and alternatives, had driven the agency's decision to use the system.

In January 2005, patent officials told us that, given the performance and usability problems, they planned to begin replacing the Image File Wrapper in September 2005 with a system that would provide the capabilities, including text- and image-based processing, that were outlined in the agency's automation plans. Preliminary information that the agency provided about the replacement system indicated that it would cost approximately $56 million over 6 years, and would not include continued use of the European Patent Office's software. However, while having made this determination about a new system, the agency had not developed a supporting business case—based on requirements, cost/benefit, and alternatives analyses—to justify this particular acquisition, or a project plan to guide the system's implementation. Thus, it is difficult to gauge the soundness of this planned investment or how it will enable USPTO to accomplish its automation plans. In response to our concerns about the lack of project documentation to support the planning and management of this initiative, the officials stated that they would reconsider their approach to planning and carrying out this project.

USPTO's difficulty in realizing intended improvements through its electronic filing system and Image File Wrapper can largely be attributed to the fact that the agency has taken an ad hoc approach to planning and managing its implementation of these systems, driven in part by its accelerated schedule for implementing an automated patent processing capability. The Clinger-Cohen Act, as well as information technology best practices and our prior reviews, emphasize the need for agencies to undertake information technology projects in a disciplined manner, based on well-established business cases that articulate agreed-upon business and technical requirements; effectively analyze project alternatives, costs, and benefits; include measures for tracking projects through their life cycle against cost, schedule, benefit, and performance targets; and ultimately, provide the basis for credible and informed decision making and project management. Yet, patent officials did not rely on established business cases to guide their implementation of these key automation initiatives.

With its ad hoc approach to implementing the electronic filing system and the Image File Wrapper, USPTO has continued a practice of ineffective project management that characterized its implementation of APS of two decades ago. The absence of sound project planning and management for these initiatives has left the agency without critical capabilities, such as text processing, and consequently, impeded its successful transition to an integrated and paperless patent processing environment. By continuing to implement information systems in this manner, USPTO undermines the intent of its patent automation strategy and jeopardizes its credibility regarding improving the efficiency of the patent process. At the conclusion of our review, the Under Secretary of Commerce for Intellectual Property, who also serves as the director of USPTO, stated that he recognized and intended to implement measures to address the weaknesses in the agency's planning and management of its automated patent systems.

USPTO's Patent Automation Is Not Supported by Essential Information Technology Investment Management Processes

USPTO's ineffective planning and management for its patent automation projects, in large measure, can be attributed to enterprise-level, systemic weaknesses in the agency's information technology investment management processes. A key premise of the Clinger-Cohen Act is that agencies have established processes, such as capital planning and investment control, to help ensure that information technology projects are implemented at acceptable costs and within reasonable and expected time frames, and contribute to tangible, observable improvements in mission performance. Such processes guide the selection, management, and evaluation of information technology investments by aiding management in considering whether to undertake a particular investment in information systems and providing a means to obtain necessary information regarding the progress of an investment in terms of cost, capability of the system to meet specified requirements, timeliness, and quality.

Further, as emphasized in our Enterprise Architecture Framework, information technology projects should show evidence of compliance with the organization's enterprise architecture, which serves as a blueprint for systematically and completely defining an organization's current (baseline) operational and technology environment and as a roadmap toward the desired (target) state. Effective implementation of an enterprise architecture can facilitate an agency by serving to inform, guide, and constrain the decisions being made for the agency, and subsequently decrease the risk of buying and building systems that are duplicative, incompatible, and unnecessarily costly to maintain and interface.

At the time of our study, USPTO had begun instituting certain essential information technology investment management mechanisms, such as a framework for its enterprise architecture and components of a capital planning and investment control process. However, it had not yet established the necessary linkages between its enterprise architecture and its capital planning and investment control process to ensure that its automation projects will comply with the architecture or fully instituted enforcement mechanisms for investment management. For example, USPTO drafted a capital planning and investment control guide in June 2004 and issued an agency administrative order requiring unit heads to use the guide in February 2005. However, according to senior agency officials, many of the processes and procedures in the guide had not been completed and fully implemented. In addition, while the agency had completed the framework for its enterprise architecture, it had not aligned its business processes and information technology in accordance with the architecture. Also, according to OCIO officials, the architecture review board responsible for enforcing compliance with the architecture was not yet in place; thus, current architecture reviews are only of an advisory nature and are not required for system implementation. Our analysis of architecture review documents that system officials provided for the electronic filing system and Image File Wrapper confirmed that the agency had not rigorously assessed either of these systems' compliance with the enterprise architecture.

Beyond these concerns, USPTO lacked reliable, experienced-based data and a process for consistently demonstrating that expected benefits of the systems are being achieved. As noted in our prior work, key system development decisions should be based on reliable data showing that resource investments will produce commensurate value, and as systems are developed, expected benefits and estimated costs should be periodically validated through actual experience. Although patent officials asserted that processing improvements had resulted from the automation that had been implemented, they acknowledged that the agency had not established performance metrics to aid in measuring the impact of the automation or validated actual experiences against established baselines. Rather, patent officials told us, they had based their accounts of performance improvement, such as reductions in the number of lost or destroyed paper patent applications as a result of the Image File Wrapper, largely on ad hoc occurrences and/or feedback from patent examiners and clerical and administrative staff. As a result, the agency lacked a basis for substantiating benefits from its automation efforts.

In addition, USPTO lacked reliable cost data for the patent automation initiatives due to weaknesses in the agency's processes for tracking and reporting project expenses. Our guide on agencies' information technology investment decision-making stresses the need for reliable and current project cost data to aid management in making critical investment decisions.[18] While the agency had systems in place to track the costs of specific tasks, particularly those assigned to its contractors, it did not have an effective means of providing aggregate cost information for its overall patent automation effort. Patent officials stated that they faced difficulties in accessing and providing comprehensive cost information for the patent systems because the agency had modified its approach to capturing and reporting cost information, along with the information systems containing this information. The difficulty that USPTO management faced in providing comprehensive information on its patent automation costs could compromise the agency's ability to provide a credible accounting for its investments and make informed management decisions about them.

Adding to these conditions, a study commissioned by USPTO's senior management in 2004 found that OCIO was not organized to help USPTO achieve its mission or accomplish the goals set out in its automation strategy.[19] The study, undertaken by an independent contractor, noted that the agency's investment management processes did not ensure appropriate reviews of automation initiatives and that the chief information officer's organization lacked sufficient credibility with its business units to ensure an effective partnership. During our review, USPTO's director made changes in key leadership positions within OCIO and the Patent Resources and Planning Office, which he considered essential to defining and implementing the patent automation strategy and bringing stability to the agency's operations. However, officials had not yet begun to improve the investment management processes to ensure appropriate reviews of the agency's automation initiatives.

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[18] GAO, *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making*, GAO/AIMD-10.1.13 (Washington, D.C.: February 1997).

[19] We did not independently assess the results of this study, but USPTO's chief information officer generally concurred with its findings.

USPTO has an explicit responsibility for ensuring that the automation initiatives that it is counting on to enhance its overall patent process are consistent with the agency's priorities and needs and are supported by the necessary planning and management to ensure that they are successfully accomplished. USPTO's 21st Century Strategic Plan was intended to help the agency accomplish a smooth transition to performance-based operations, and having firmly established and enforced investment management practices will be crucial to achieving this. At the conclusion of our review, USPTO's director and the new chief information officer, appointed in February 2005, told us that they were aware of organizational and management weaknesses within OCIO and acknowledged the need to strengthen the agency's investment management processes and practices and effectively apply them to USPTO's patent automation initiatives.

Conclusions

USPTO has been attempting to implement an integrated, paperless patent process for about two decades and, in the process, has delivered important automated capabilities. Nonetheless, after spending over a billion dollars on its efforts, the agency is still not yet effectively positioned to process patent applications in a fully automated environment; moreover, when and how it will actually achieve this capability remains uncertain. System performance and usability problems, resulting largely from ineffective planning and management of its automated capabilities, have limited the effectiveness of key systems that the agency has implemented to support critical patent processes. USPTO's director and new chief information officer have recognized the need to improve the agency's planning and management of its automation initiatives. However, weaknesses in key information technology management processes needed to guide the agency's investments in patent automation, such as incomplete capital planning and investment controls and a lack of reliable cost data, could preclude its ability to successfully accomplish this. Under such circumstances, USPTO risks continuing to implement information technology that does not support the agency's needs, and that threatens its overall goal of achieving a fully electronic capability to process its growing patent application workload.

Recommendations for Executive Action

To more effectively position USPTO to achieve key patent processing improvements through the use of information technology, we recommend that the Secretary of Commerce direct the Under Secretary of Commerce for Intellectual Property to take the following actions before proceeding with any new patent automation initiatives:

- reassess, and where necessary, revise the approach for implementing and achieving effective uses of major information systems to support a fully automated patent process, including electronic filing and image- and text-based patent processing capabilities;
- establish disciplined processes for planning and managing the development of patent systems based on well-established business cases that articulate agreed-upon business and technical requirements; include analyses of project alternatives, costs, and benefits; and include measures for tracking projects through their life cycle against cost, schedule, benefit, and performance targets; and
- fully institute and enforce at the enterprise level, information technology investment management processes and practices to ensure that automation initiatives support the agency's mission and are aligned with the agency's enterprise architecture, to include (1) finalizing and implementing a capital planning and investment control guide, (2) establishing an architecture review board and requiring its oversight of major information technology investments, (3) establishing a process to identify expected benefits to internal and external users of information systems and to measure performance against expected benefits, and (4) establishing a process for tracking and reporting aggregate cost information for automation initiatives.

Agency Comments and Our Evaluation

In written comments on a draft of this report, the Under Secretary of Commerce for Intellectual Property and Director of USPTO generally agreed with our findings, conclusions, and recommendations. The agency acknowledged weaknesses in its processes used to manage patent automation and agreed with the need for key improvements, such as (1) developing architectural linkages to the planning process, (2) implementing a capital planning and investment control guide, and (3) completing planned organizational changes. The Under Secretary emphasized that USPTO had already initiated reforms to ensure more effective implementation of its automation projects, including personnel changes in key patent-management positions, and indicated that the agency would rely on the results of our study in conjunction with other assessments that have been conducted to further improve management processes guiding the agency's use of information technology.

Nonetheless, the agency only partially agreed with several specific aspects of our assessment. The Under Secretary pointed out, for example, that in February 2005, USPTO had issued an agency administrative order covering its information technology investment review board and reemphasizing its commitment to integrated investment decision practices. In addition, the agency pointed to our awareness of it having also initiated a review of the architectural linkages to its investments and key decision-making processes being implemented. Further, it stated that it had instituted investment decision papers to provide its investment review board members with improved documentation, including more thorough financial, technical, and alternatives analyses, to assist in making appropriate investment decisions.

The actions that USPTO stated that it has taken could help to improve its overall investment management and decision making. In mid-April 2005, patent officials provided us with a finalized copy of the agency administrative order requiring unit heads to use the capital planning and investment control guide in selecting, controlling, and evaluating information technology investments. However, they stated that the agency had not yet completed the capital planning and investment control processes and procedures. Nonetheless, we have revised our report to reflect the agency's issuance of this order. Further, during our study, agency officials did not inform us of any specific actions that had been initiated to review architectural linkages to investments and gave no indication that the agency had instituted investment decision papers to improve information technology investment documentation and related decision making. Therefore, we lack a basis for evaluating and/or commenting on these particular actions.

USPTO also provided comments on the recommendations contained in our report. Specifically, regarding our recommendation to reassess, and where necessary, revise the approach for implementing and effectively using information systems to support a fully automated patent process, the agency commented that it was changing the method of implementing and achieving effective use of its information technology. The agency stated that it had chosen to follow a more systematic and phased approach to using information technology, in which alternatives are thoroughly considered and evaluated against architectural standards, implementation costs, and the ability to effectively meet users' needs, and that detailed investment decision papers are being prepared for all major investments. It added that future patent development initiatives, including those for electronic filing and text-based processing capabilities, would be subjected to this approach to ensure that automated systems are used most effectively to achieve patent program goals. As the agency takes action to achieve more effective use of its information technology, we look forward to monitoring its use of these measures to successfully implement future patent automation initiatives.

Regarding our recommendation to establish disciplined processes for planning and managing the development of patent systems based on well-established business cases, USPTO stated that it was in the process of improving its capital planning and investment control process. For example, it stated that an already-established committee had proposed a format for developing improved business cases that would articulate business needs and expected benefits, require consideration of alternative solutions, and reflect compliance with the agency's enterprise architecture. As stressed in our report, such measures are essential to ensuring effective management of the agency's information technology initiatives and to achieving patent processing improvements through the use of information technology.

Finally, in commenting on our recommendation that the agency fully institute and enforce information technology investment management processes and practices at the enterprise level, USPTO (1) reiterated its actions toward improving its capital planning and investment control process; (2) stated that its Office of Applications Architecture and Services functions as the agency's architectural review board with responsibility for ensuring that information technology systems' designs comply with the enterprise architecture; (3) stated that it would, upon completion of its capital planning and investment control guide, formally establish procedures for reviewing its investments' performance against expected benefits; and (4) stated that it is refining its tools to more completely capture the total cost of its information technology investments.

Such measures, if successfully applied, could substantially improve USPTO's accountability for its information technology investments. However, it is important to note that, during our study, the agency could not provide evidence of a functioning architecture review board. Patent officials told us that such an organization had not been established and that reviews had not been required to ensure that planned information technology projects were consistent with the enterprise architecture. As stated earlier in this report, our analysis of documentation supporting the electronic filing system and Image File Wrapper determined that the agency had not rigorously assessed either of these systems' compliance with the enterprise architecture. Given this finding, we continue to stress the need for the agency to enforce its architecture review board's oversight of major information technology initiatives.

Beyond these points of discussion, USPTO offered detailed comments on its Image File Wrapper. While agreeing with the need for more rigorous decision making to support its implementation of this system, the Under Secretary nonetheless believed that moving forward with this initiative was an appropriate step that had fulfilled the agency's promise to provide electronic (paperless) processing of patent applications, and that had provided numerous benefits for the agency in a short period of time. For example, the Under Secretary stated that the Image File Wrapper had eliminated the agency's need for space to house paper patents and, in conjunction with Internet access to patent applications, had alleviated problems associated with lost application files and file integrity. As such, the agency did not see a need to assess the key management processes guiding its decision to undertake this investment.

As reflected in this report, we recognize that the Image File Wrapper, along with Internet access to patent applications, has provided USPTO with important capabilities to support the processing of patents. However, patent officials and examiners acknowledged that performance and usability problems had rendered the system incapable of fully meeting processing needs. Further, patent and OCIO officials had largely attributed the system's problems to known limitations in the design of the software that the agency had acquired from the European Patent Office. They added that, given the performance and usability problems, the agency planned to replace the Image File Wrapper. Thus, while certain benefits should be inherent from having this system in place, in our view, the agency could nonetheless take important lessons from the ad hoc approach in which this investment was undertaken. USPTO opted to undertake this initiative in a manner that did not ensure that it had fully evaluated its patent processing requirements against the most cost-efficient and effective solution for addressing its needs. Moreover, in undertaking the initiative without full consideration of potential alternatives, costs, and benefits, the agency put itself at risk of not fully realizing desired outcomes in terms of improved processing of patent applications.

Appendix II contains the text of USPTO's comments on our draft report. The agency also provided technical comments, which we have incorporated, as appropriate.

We are sending copies of this report to the Secretary of Commerce, the Under Secretary of Commerce for Intellectual Property, and the Director, Office of Management and Budget. Copies will also be available at no charge on our Web site at www.gao.gov.

Should you have any questions on matters contained in this report, please contact me at (202) 512-6240. I can also be reached by email at koontzl@gao.gov. Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.

Linda D Koontz

Linda D. Koontz
Director, Information Management Issues

Appendix I

Scope and Methodology

To accomplish our objective, we reviewed USPTO's 21st Century Strategic Plan, Tools for Electronic Application Management project documentation, and related information technology plans to determine the agency's vision for and approach to automating its patent process. We also assessed current and selected past initiatives that USPTO has undertaken to develop and implement its automated patent processing capabilities. Specifically, we analyzed programmatic and technical documentation describing the agency's patent process, current electronic patent processing capabilities, and plans for future automation. We evaluated available project management documentation, such as project plans, time lines, and project status reports to determine the agency's progress in implementing a fully automated patent processing system. In addition, to assess key decisions and actions related to the USPTO's development and use of specific electronic information and systems to support patent processing, we examined the agency's consideration of key information technology investment management procedures and practices, such as capital planning and investment control, enterprise architecture, and risk management, in planning and managing the patent automation initiatives. Further, we examined cost information for USPTO's patent automation initiatives, as provided by the agency; however, we did not verify the accuracy of this reported information.

As part of our review, we also examined internal reports documenting an independent contractor's assessment of USPTO's information technology organization. We did not independently validate the findings contained in the reports; however, in discussing their contents with us, USPTO's chief information officer generally concurred with the findings. In addition, we reviewed relevant reports discussing the patent operations that had been prepared by the Department of Commerce's Office of Inspector General.

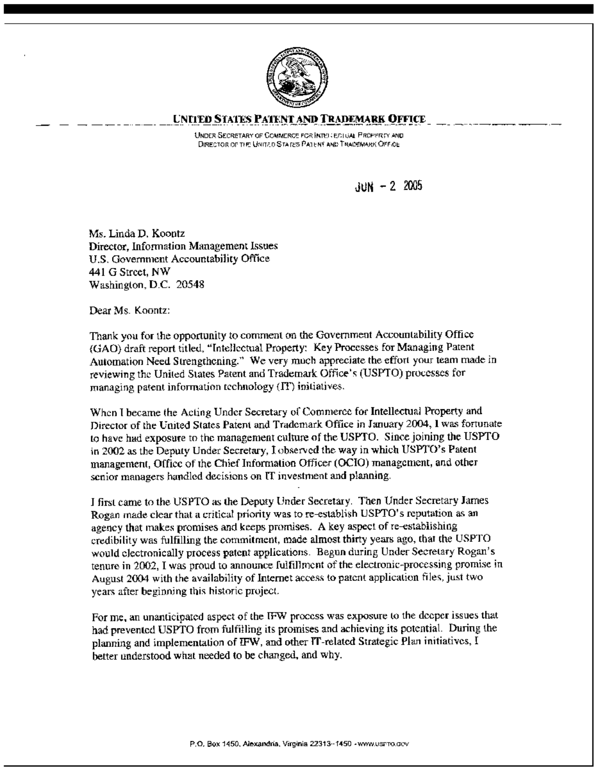
To supplement our analysis, we interviewed senior patent officials, including the Deputy Commissioner for Patent Resources Planning; the Administrator, Search and Information Resources Administration; and the USPTO chief information officer, who was appointed in February 2005. We also discussed the agency's patent automation efforts with the Under Secretary of Commerce for Intellectual Property, who serves as the director of USPTO. In addition, we met with relevant systems officials who were involved in or knowledgeable about the development and implementation of the automated patent capabilities and with patent managers in charge of the systems' operations. We also interviewed officials of the European Patent Office who worked with USPTO on its implementation of the Image File Wrapper and representatives of the patent examiners union. In these interviews, we discussed USPTO's strategy and supporting plans for automating the patent processes and elicited their views about and understanding of key management decisions and challenges associated with the automation initiatives.

Further, as part of a series of 11 focus groups undertaken by GAO, we obtained patent examiners' views of and experiences with the automated patent processes. The focus groups consisted of from 6 to 11 employees each and included supervisory patent examiners (3 groups) and patent examiners (8 groups). In total, 91 examiners participated in the focus groups. The 91 participants were randomly selected from the seven technical areas at USPTO's two locations (in Crystal City and Alexandria, Virginia), and all participants had been employed at the agency for at least 9 months. A GAO facilitator led each focus group. The responses were then systematically analyzed using a content analysis.

We conducted our study from June 2004 through April 2005, in accordance with generally accepted government auditing standards.

Appendix II

Comments from the U.S. Patent and Trademark Office



UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

JUN - 2 2005

Ms. Linda D. Koontz
Director, Information Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, D.C. 20548

Dear Ms. Koontz:

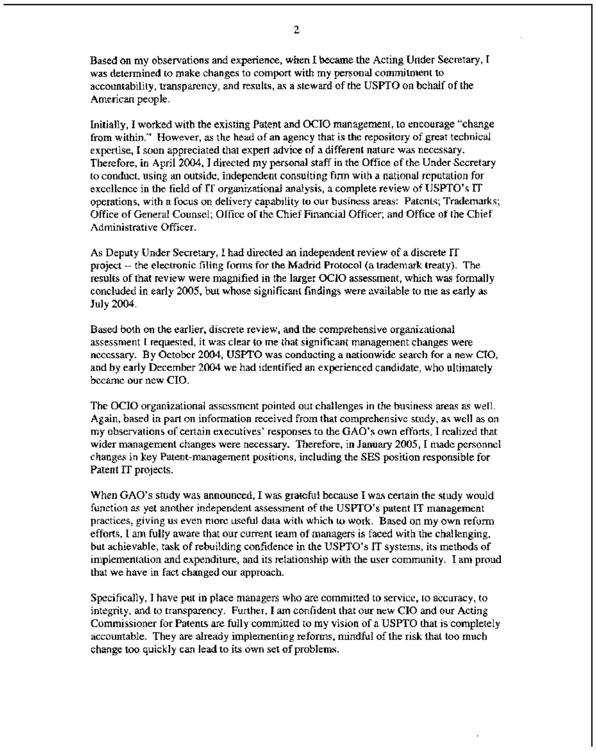
Thank you for the opportunity to comment on the Government Accountability Office (GAO) draft report titled, "Intellectual Property: Key Processes for Managing Patent Automation Need Strengthening." We very much appreciate the effort your team made in reviewing the United States Patent and Trademark Office's (USPTO) processes for managing patent information technology (IT) initiatives.

When I became the Acting Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office in January 2004, I was fortunate to have had exposure to the management culture of the USPTO. Since joining the USPTO in 2002 as the Deputy Under Secretary, I observed the way in which USPTO's Patent management, Office of the Chief Information Officer (OCIO) management, and other senior managers handled decisions on IT investment and planning.

I first came to the USPTO as the Deputy Under Secretary. Then Under Secretary James Rogan made clear that a critical priority was to re-establish USPTO's reputation as an agency that makes promises and keeps promises. A key aspect of re-establishing credibility was fulfilling the commitment, made almost thirty years ago, that the USPTO would electronically process patent applications. Begun during Under Secretary Rogan's tenure in 2002, I was proud to announce fulfillment of the electronic-processing promise in August 2004 with the availability of Internet access to patent application files, just two years after beginning this historic project.

For me, an unanticipated aspect of the IFW process was exposure to the deeper issues that had prevented USPTO from fulfilling its promises and achieving its potential. During the planning and implementation of IFW, and other IT-related Strategic Plan initiatives, I better understood what needed to be changed, and why.

P.O. Box 1450, Alexandria, Virginia 22313-1450 - www.uspto.gov



Based on my observations and experience, when I became the Acting Under Secretary, I was determined to make changes to comport with my personal commitment to accountability, transparency, and results, as a steward of the USPTO on behalf of the American people.

Initially, I worked with the existing Patent and OCIO management, to encourage "change from within." However, as the head of an agency that is the repository of great technical expertise, I soon appreciated that expert advice of a different nature was necessary. Therefore, in April 2004, I directed my personal staff in the Office of the Under Secretary to conduct, using an outside, independent consulting firm with a national reputation for excellence in the field of IT organizational analysis, a complete review of USPTO's IT operations, with a focus on delivery capability to our business areas: Patents; Trademarks; Office of General Counsel; Office of the Chief Financial Officer; and Office of the Chief Administrative Officer.

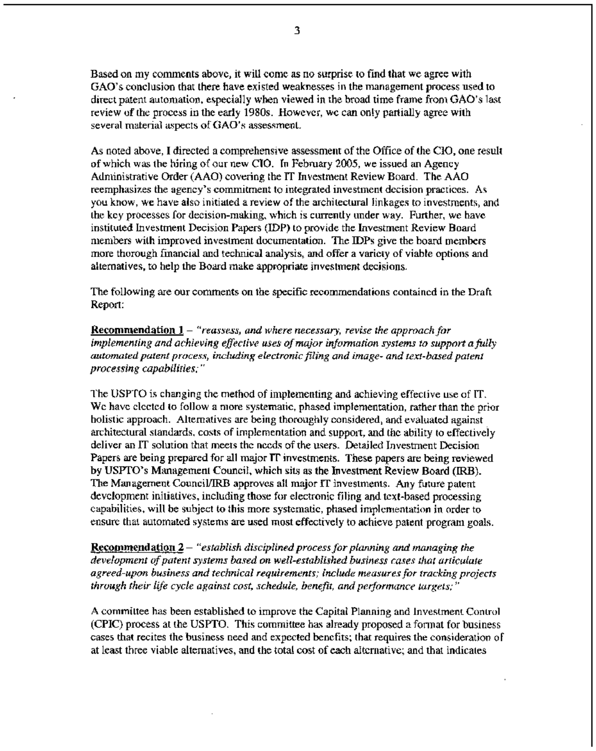
As Deputy Under Secretary, I had directed an independent review of a discrete IT project -- the electronic filing forms for the Madrid Protocol (a trademark treaty). The results of that review were magnified in the larger OCIO assessment, which was formally concluded in early 2005, but whose significant findings were available to me as early as July 2004.

Based both on the earlier, discrete review, and the comprehensive organizational assessment I requested, it was clear to me that significant management changes were necessary. By October 2004, USPTO was conducting a nationwide search for a new CIO, and by early December 2004 we had identified an experienced candidate, who ultimately became our new CIO.

The OCIO organizational assessment pointed out challenges in the business areas as well. Again, based in part on information received from that comprehensive study, as well as on my observations of certain executives' responses to the GAO's own efforts, I realized that wider management changes were necessary. Therefore, in January 2005, I made personnel changes in key Patent-management positions, including the SES position responsible for Patent IT projects.

When GAO's study was announced, I was grateful because I was certain the study would function as yet another independent assessment of the USPTO's patent IT management practices, giving us even more useful data with which to work. Based on my own reform efforts, I am fully aware that our current team of managers is faced with the challenging, but achievable, task of rebuilding confidence in the USPTO's IT systems, its methods of implementation and expenditure, and its relationship with the user community. I am proud that we have in fact changed our approach.

Specifically, I have put in place managers who are committed to service, to accuracy, to integrity, and to transparency. Further, I am confident that our new CIO and our Acting Commissioner for Patents are fully committed to my vision of a USPTO that is completely accountable. They are already implementing reforms, mindful of the risk that too much change too quickly can lead to its own set of problems.



3

Based on my comments above, it will come as no surprise to find that we agree with GAO's conclusion that there have existed weaknesses in the management process used to direct patent automation, especially when viewed in the broad time frame from GAO's last review of the process in the early 1980s. However, we can only partially agree with several material aspects of GAO's assessment.

As noted above, I directed a comprehensive assessment of the Office of the CIO, one result of which was the hiring of our new CIO. In February 2005, we issued an Agency Administrative Order (AAO) covering the IT Investment Review Board. The AAO reemphasizes the agency's commitment to integrated investment decision practices. As you know, we have also initiated a review of the architectural linkages to investments, and the key processes for decision-making, which is currently under way. Further, we have instituted Investment Decision Papers (IDP) to provide the Investment Review Board members with improved investment documentation. The IDPs give the board members more thorough financial and technical analysis, and offer a variety of viable options and alternatives, to help the Board make appropriate investment decisions.

The following are our comments on the specific recommendations contained in the Draft Report:

Recommendation 1 – *"reassess, and where necessary, revise the approach for implementing and achieving effective uses of major information systems to support a fully automated patent process, including electronic filing and image- and text-based patent processing capabilities;"*

The USPTO is changing the method of implementing and achieving effective use of IT. We have elected to follow a more systematic, phased implementation, rather than the prior holistic approach. Alternatives are being thoroughly considered, and evaluated against architectural standards, costs of implementation and support, and the ability to effectively deliver an IT solution that meets the needs of the users. Detailed Investment Decision Papers are being prepared for all major IT investments. These papers are being reviewed by USPTO's Management Council, which sits as the Investment Review Board (IRB). The Management Council/IRB approves all major IT investments. Any future patent development initiatives, including those for electronic filing and text-based processing capabilities, will be subject to this more systematic, phased implementation in order to ensure that automated systems are used most effectively to achieve patent program goals.

Recommendation 2 – *"establish disciplined process for planning and managing the development of patent systems based on well-established business cases that articulate agreed-upon business and technical requirements; include measures for tracking projects through their life cycle against cost, schedule, benefit, and performance targets;"*

A committee has been established to improve the Capital Planning and Investment Control (CPIC) process at the USPTO. This committee has already proposed a format for business cases that recites the business need and expected benefits; that requires the consideration of at least three viable alternatives, and the total cost of each alternative; and that indicates compliance with the enterprise architecture, including whether the investment is based on current, emerging, twilight or sunset architecture. The business case must be accompanied by an investment schedule that includes a list of milestones with dates; a listing of assumptions, constraints, and a risk assessment with mitigation strategies; and a list of critical success factors for the project. Finally, the investment schedule must explain how the proposed approach aligns with the USPTO's *21st Century Strategic Plan*, and with the President's Management Agenda (PMA).

Following approval of the business case and selection of the preferred alternative, project plans will be developed, and schedules, costs and progress will be managed against these plans, using Earned Value Management (EVM). All investments will also be evaluated against the proposed benefits.

As a result of the independent assessment conducted at my direction, we realized the need to strengthen our IT planning and management processes. Our new CIO is engaged in implementing organizational improvements that will focus on Quality Management and overall IT process improvements.

Recommendation 3 – *"fully institute and enforce at the enterprise level, information technology investment management processes and practices to ensure that automation initiatives support the agency's mission and are aligned with the agency's enterprise architecture, to include (1) finalizing and implementing a capital planning and investment control guide, (2) establishing an architecture review board and requiring its oversight of major information technology investments, (3) establishing a process to identify expected benefits to internal and external users of information systems and to measure performance against expected benefits, and (4) establishing a process for tracking and reporting aggregate cost information for automation initiatives."*

In reference to item 1, as noted in our response to the previous recommendation, the USPTO is addressing its CPIC process. Once this is made final, the existing capital planning and investment control guide will be updated to reflect the enhanced procedures.

Concerning the second item, IT project architectures are currently reviewed by the Office of Applications Architecture and Services. This office is responsible for ensuring compliance of IT systems' designs with the USPTO Enterprise Architecture. This group executes the functions performed by an architectural review board.

Regarding item 3, as the committee completes the CPIC guide, it will formally establish the procedures for review of the expected benefits from an IT investment and the evaluation of the performance of the investment against providing those expected benefits.

Finally, concerning item 4, the USPTO has the tools in place to aggregate the cost information for automation initiatives, and is refining use of those tools to more completely capture the total cost of any IT investment.

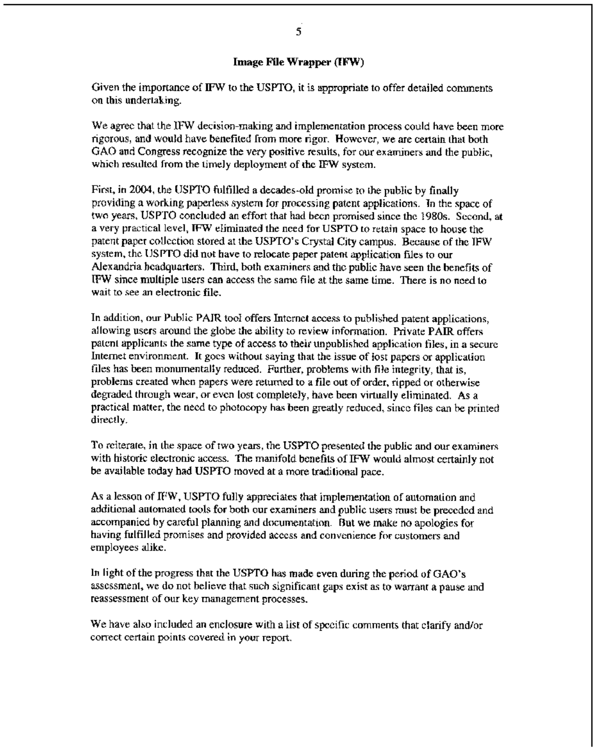


Image File Wrapper (IFW)

Given the importance of IFW to the USPTO, it is appropriate to offer detailed comments on this undertaking.

We agree that the IFW decision-making and implementation process could have been more rigorous, and would have benefited from more rigor. However, we are certain that both GAO and Congress recognize the very positive results, for our examiners and the public, which resulted from the timely deployment of the IFW system.

First, in 2004, the USPTO fulfilled a decades-old promise to the public by finally providing a working paperless system for processing patent applications. In the space of two years, USPTO concluded an effort that had been promised since the 1980s. Second, at a very practical level, IFW eliminated the need for USPTO to retain space to house the patent paper collection stored at the USPTO's Crystal City campus. Because of the IFW system, the USPTO did not have to relocate paper patent application files to our Alexandria headquarters. Third, both examiners and the public have seen the benefits of IFW since multiple users can access the same file at the same time. There is no need to wait to see an electronic file.

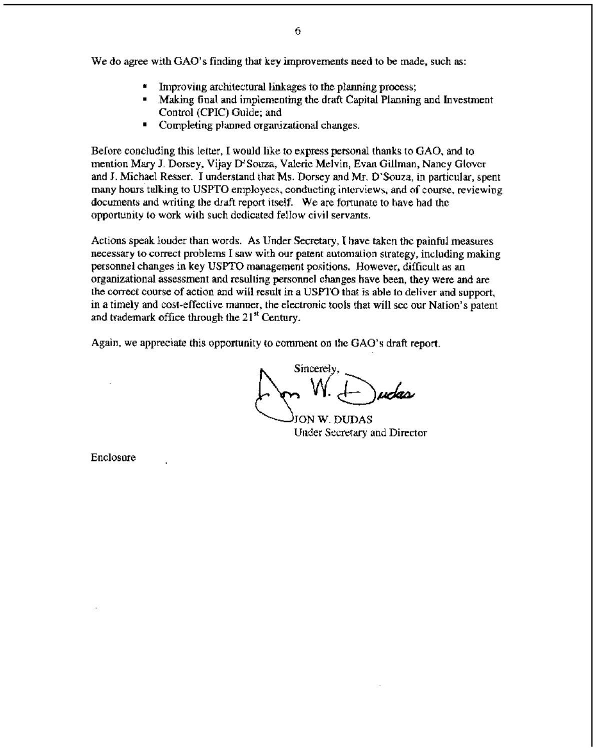
In addition, our Public PAIR tool offers Internet access to published patent applications, allowing users around the globe the ability to review information. Private PAIR offers patent applicants the same type of access to their unpublished application files, in a secure Internet environment. It goes without saying that the issue of lost papers or application files has been monumentally reduced. Further, problems with file integrity, that is, problems created when papers were returned to a file out of order, ripped or otherwise degraded through wear, or even lost completely, have been virtually eliminated. As a practical matter, the need to photocopy has been greatly reduced, since files can be printed directly.

To reiterate, in the space of two years, the USPTO presented the public and our examiners with historic electronic access. The manifold benefits of IFW would almost certainly not be available today had USPTO moved at a more traditional pace.

As a lesson of IFW, USPTO fully appreciates that implementation of automation and additional automated tools for both our examiners and public users must be preceded and accompanied by careful planning and documentation. But we make no apologies for having fulfilled promises and provided access and convenience for customers and employees alike.

In light of the progress that the USPTO has made even during the period of GAO's assessment, we do not believe that such significant gaps exist as to warrant a pause and reassessment of our key management processes.

We have also included an enclosure with a list of specific comments that clarify and/or correct certain points covered in your report.



We do agree with GAO's finding that key improvements need to be made, such as:

- Improving architectural linkages to the planning process;
- Making final and implementing the draft Capital Planning and Investment Control (CPIC) Guide; and
- Completing planned organizational changes.

Before concluding this letter, I would like to express personal thanks to GAO, and to mention Mary J. Dorsey, Vijay D'Souza, Valerie Melvin, Evan Gillman, Nancy Glover and J. Michael Resser. I understand that Ms. Dorsey and Mr. D'Souza, in particular, spent many hours talking to USPTO employees, conducting interviews, and of course, reviewing documents and writing the draft report itself. We are fortunate to have had the opportunity to work with such dedicated fellow civil servants.

Actions speak louder than words. As Under Secretary, I have taken the painful measures necessary to correct problems I saw with our patent automation strategy, including making personnel changes in key USPTO management positions. However, difficult as an organizational assessment and resulting personnel changes have been, they were and are the correct course of action and will result in a USPTO that is able to deliver and support, in a timely and cost-effective manner, the electronic tools that will see our Nation's patent and trademark office through the 21^{st} Century.

Again, we appreciate this opportunity to comment on the GAO's draft report.

Sincerely,
Jon W. Dudas
JON W. DUDAS
Under Secretary and Director

Enclosure

Appendix III

GAO Contact and Staff Acknowledgments

GAO Contact

Linda D. Koontz (202) 512-6240

Staff Acknowledgments

In addition to the individual named above, Valerie Melvin, Mary J. Dorsey, and Vijay D'Souza made significant contributions to this report. Evan Gilman, Nancy Glover, and J. Michael Resser also contributed to this report.

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Mr. SMITH. Mr. Stern.

TESTIMONY OF RONALD J. STERN, PRESIDENT, PATENT OFFICE PROFESSIONAL ASSOCIATION (POPA)

Mr. STERN. Thank you, Mr. Chairman, Ranking Member Berman and Members of the Subcommittee. As many of you know, POPA represents the engineers, scientists and attorneys who, as patent examiners, determine the patentability of hundreds of thousands of patent applications each year.

The agency has come under serious criticism lately. The principal problems deal with quality and timeliness. In addition, there is a problem with hiring and retaining our workforce.

The agency manufactures patents, but it does so in the high-stress environment of a legal sweatshop. When it comes to patent examination, you can take steps to get the job done faster or cheaper, but those steps will inevitably decrease the quality of the work.

You cannot increase the quality of examination without providing examiners the time necessary to do the job. Examiner quotas, measured in 6-minute increments, currently provide as little as 11.2 hours to primary examiners in low-complexity arts, and only 22.1 hours in the most complex arts.

Quotas established in 1976 are still in use today. In the meantime, technology is more complex, specifications are bigger, applications have more claims, and the amount of literature to be searched has ballooned. Electronic file wrappers cost examiners 1 to 3 hours of extra work per case. Examiners need a 20 percent increase in time per case.

Applicants pay substantial fees for excess claims, large specifications and information disclosure statements. Examiners must be given time proportional to these fees to ensure that applicants will get what they have paid for.

The most common criticism is that examiners do not find the best prior art. Text searching works in some arts, but not for all. Speedy searches require updating the U.S. Classification system regularly, which has not happened.

In the automated databases the wisdom and experience of prior examiners is lost. Old paper search files were regularly augmented by examiners' explanatory notes and by "feeding the shoes" newly discovered references.

There is no problem hiring examiners. The problem is keeping them. Approximately half leave within their first 3 years on the job. More important are the midcareer employees who leave the agency. In fiscal 2005, approximately 40 percent of all of those expected to leave will be employees with between 3 and 15 years of experience. Some of these employees are leaving without even having another job to go to.

The USPTO has implemented employee benefits such as special pay rates, flexible work schedules, family-friendly policies and transit subsidies. Benefits, however, are not by themselves sufficient to overcome many employees' dissatisfaction with the production-oriented nature of patent examining. The appeal of the USPTO's benefits is in constant opposition with the stress of the day-to-day legal sweatshop environment.

The agency is ruthlessly effective in removing and disciplining employees. Almost 10 percent of all removals from the nondefense Federal workforce in fiscal 2001 were removed from the examining corps. So far this year, in a workforce of fewer than 7,000, the agency has taken 928 official actions against employees. Sadly, for every employee who was fired in 2001, there were more than 13 others who left voluntarily; later years are even worse.

The 21st Century Strategic Plan has converted the prior Administration's culture of collaboration into a culture of conflict. Employees bristle with anger over relentless criticism of their work, especially because 40 percent of that criticism turns out to be incorrect.

The USPTO needs to go back to the basics of examining. It needs to emphasize training and mentoring instead of disciplinary actions. It needs to provide adequate time for doing a quality job. This will improve examiner retention.

This Subcommittee can help ensure that the agency uses examination fees for examination. We recommend that you amend 35 U.S.C. section 42 to require the agency to use all of the excess claims fees, excess specification fees, and information disclosure fees to fund additional examining time for examiners to do the work for which applicants are paying those fees.

In section 42, Congress has already put a fence around trademark fees. It is time to expand that precedent to patent fees. If the USPTO truly desires to reduce attrition, it must effectively address the reason that most examiners leave: job dissatisfaction. It must recognize that examiners are skilled professionals and deserve to be treated as such. It must give them the time, the tools, and the space to do that job. Unless and until the USPTO addresses these problems, the revolving door of attrition will continue to spin.

Thank you very much, Mr. Chairman.

Mr. SMITH. Thank you, Mr. Stern.

[The prepared statement of Mr. Stern follows:]

PREPARED STATEMENT OF RONALD J. STERN

Mr. Chairman, Ranking Member Berman and Members of the Subcommittee:

Thank you for the opportunity to present the views of the Patent Office Professional Association (POPA) on operations at the U.S. Patent and Trademark Office (USPTO) and, in particular, on the recent reports of the Dept. of Commerce Office of Inspector General,[1] General Accountability Office[2] and National Academy of Public Administration.[3]

POPA represents more than 4,300 skilled patent professionals at the USPTO. The vast majority of our members are engineers, scientists and attorneys who, as patent examiners, determine the patentability of the hundreds of thousands of patent applications the USPTO receives each year. The patent professionals of POPA are diligent, highly skilled, hard working individuals firmly committed to maintaining the quality and integrity of the U.S. patent system.

The vital role of patents to the U.S. and global economies is without question. Their value is evidenced by the rapidly expanding efforts of inventors and companies to protect intellectual property throughout the world. The U.S. patent system is the engine that has driven innovation in America and helped produce the most powerful and robust economy in history.

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[1] "USPTO should Reassess How Examiner Goals, Performance Appraisal Plans, and The Award System Stimulate and Reward Examiner Production," U.S. Dept. of Commerce Office of Inspector General Final Inspection Report No. IPE-15722, September 2004.

[2] "USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain," U.S. Government Accountability Office Report No. GAO-05-720, June 2005.

[3] "U.S. Patent and Trademark Office: Transforming to Meet the Challenges of the 21st Century," Report of the National Academy of Public Administration for the United States Patent and Trademark Office, August 2005.

Unfortunately, the USPTO has come under considerable criticism lately for failing to allow high-quality patents in a timely manner. This criticism has resulted in increased scrutiny of the day-to-day operations of the USPTO as well as review of the laws governing the patent system. Recently, several government studies and at least one book have been published that attempt to identify problems facing the USPTO today while proposing a variety of solutions for those problems. Among the problems virtually all studies agree on are: the need to hire and retain a highly skilled workforce; improving the quality and timeliness of issued patents; and the ability for the USPTO to keep and use all its fees for its operations.

While POPA agrees that these are important issues facing the USPTO, it does not agree with many of the solutions proposed by some of these studies. Many proposed solutions represent radical changes to the patent system and go far beyond what is necessary to improve performance at the USPTO. Rather than a massive overhaul of the agency or a rewrite of the patent statutes, POPA believes that what is necessary is for the USPTO to go back to the basics of its mission—examining patent applications and issuing valid patents.

To improve the operations of the USPTO, Congress, USPTO management and its employees need to work together to provide sufficient time for examiners to examine patent applications, improve the tools that examiners use to identify relevant references ("prior art"), hire and retain a highly skilled workforce and improve labor-management relations.

A GOOD JOB TAKES TIME

"Faster, Better, Cheaper. Which two would you like?" This economic axiom is as applicable to patent examination as it is to any manufacturing process. The USPTO manufactures patents. But right now, it manufactures those patents in the high-stress environment of a "legal sweatshop." When it comes to patent examination you can take steps to get the job done faster or cheaper, but those steps will inevitably decrease the quality of the work. You cannot increase the quality of examination without providing examiners the necessary time to do the job.

The USPTO controls its throughput of patent applications using a rigorous goal-oriented production and workflow system that measures examiners' work output (production) in 6-minute increments. On average, a patent examiner has approximately twenty hours to complete the examination of a utility-type patent application. The agency has long recognized that technologies differ in complexity and that some examiners are more experienced than others. Primary examiners, those at GS grades 14 and 15 with authority to act independently, are expected to be much more productive than junior examiners requiring various levels of supervision. The current production system only allows some primary examiners in low complexity technologies as little as 11.2 hours per application. Even primary examiners in the most complex technologies are only allowed a maximum of 22.1 hours.[4] Examiners working on design-type applications or plant applications have even less time than those working on utility-type applications. On average, these examiners have about five to seven hours per application.

These agency production goals have remained essentially unchanged since they were put in place in 1976. Since that time, however, the nature of the work has changed considerably. Indeed, some technologies such as biotechnology, nanotechnology, bioinformatics, and business methods either were not patentable or did not even exist when these goals were put in place. Since 1976, patent applications have become more complex. Applications today often have larger specifications and higher numbers of claims than applications filed in 1976. Applicant-submitted information disclosure statements are often so large that they require storage in boxes. The increased complexity of patent applications has been recognized by both the USPTO and Congress as evidenced by the recent dramatic increases in fees for large specifications and excess claims.

Equally problematic is the massive explosion of information that patent examiners have to search through to identify relevant prior art. Almost two million new U.S. patents have issued just within the last fifteen years. The agency's database of issued patents grows by thousands every week. The USPTO will soon issue its 7,000,000th patent. Foreign patent literature is also growing at a comparable rate. The growth of these two sources of prior art pale by comparison to the explosion of information published in non-patent literature such as scientific and technical journals, trade magazines, catalogs, internet web pages and other publications that examiners search to determine the patentability of a claimed invention.

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[4] National Academy of Public Administration Report, August 2005, Appendix D, Table D-2.

If these problems aren't enough for examiners, the agency's deployment of the Image File Wrapper System (IFW) has transferred a considerable amount of clerical work from the agency's technical support staff to the examining corps. Prior to IFW, patent applications were legal-size three-fold paper files that examiners worked on at their desks. All of the relevant papers were readily identifiable and readable. Now, with IFW, virtually all files are scanned copies of originally filed applications and only available electronically. Many examiners find these scanned files difficult to navigate through since individual papers are often difficult to identify. Thus, examiners now spend more time just trying to figure out what papers are in the application. More importantly, most examiners find the scanned images difficult to read on even the USPTO's high-quality computer monitors. They now spend their precious examining time printing out and collating documents on their desktop printers. Examiners repeatedly tell POPA that the IFW system alone is causing them from one to three hours of additional work on each application. Since the advent of the IFW "paperless office," paper usage has doubled at the USPTO.

Continuing problems with USPTO automation tools and the dramatic increase in paper usage were the impetus behind another Government Accountability Office report issued simultaneously with their report on USPTO hiring and retention problems cited above.[5] During focus group sessions held in conjunction with this investigation, examiners made the same complaints to Government Accountability Office investigators as they were making to POPA concerning USPTO automation. Most interesting is the fact that first line supervisors made similar complaints in their own focus group sessions. Since examiner goals have not changed since 1976, these additional hours must come from examiners taking shortcuts, cutting corners on searching and examination and putting in significant amounts of their own time (unpaid voluntary overtime) to get the job done. This results in a highly stressful "legal sweatshop" environment that ultimately leads to many examiners leaving the agency.

For years now, the USPTO has alleged that increased reliance on automation will help it do a better job of examining. When it comes to searching, the agency has placed all its eggs in the automation basket. It has all but abandoned support for the U.S. Classification System, a much-needed tool for adequately searching many technologies that are not readily searched by text searching automated tools. It has continuously refused to expend the necessary resources to properly integrate all issued patents into its text and image searchable patent database. It repeatedly fails to seek adequate input from examiners in the design and testing of hardware and software before deployment. The agency has spent well over a billion dollars on automated tools to assist examiners and yet the agency is being criticized for poor quality patents and an ever-increasing backlog of unexamined applications. This comes as no surprise to examiners.

No amount of automation can help an examiner read and understand a patent application and the prior art faster. This is not to say that the agency's efforts have been a waste of time and money. While many improvements are needed in the USPTO's automated tools as well as the U.S. Classification System, these tools do often allow examiners to identify relevant prior art. The problem is that there is so much more prior art to search, read and understand. This is what takes time. And this is what has not been addressed by the agency since 1976. Add to this explosion of prior art, the drains on examiners' time by the Image File Wrapper system and other added job duties, and it quickly becomes apparent how amazing a job the examiners of the USPTO really do under the circumstances.

Examiners are not asking for extravagant increases in their goals. A twenty percent increase in time will compensate examiners for the many duties that have been added to their jobs since 1976 and offset the increasing complexity of the entire examination process. It would help to relieve the stressful USPTO workplace and help reverse attrition. Most importantly, it will provide examiners with the time they need to do a better search and examination of patent applications.

For years, the agency has been collecting fees for excess claims and information disclosure statements, recognizing that these extra items will make examination of the application more labor intensive. But the agency has never passed those extra fees on to examiners in the form of additional time to examine the application. Simply insuring that the USPTO provide the additional time to examiners that patent applicants have already paid for will go a long way towards providing examiners with the time necessary to do the quality job that everyone desires.

It is important to recognize that providing extra time for examiners to do their job does not inherently translate into increased application pendency. Better searching and examination will increase the certainty of rejection of old or obvious ideas. As patent applicants realize this, they will be less likely to expend effort and resources on patent applications of questionable innovative or economic importance. Thus, better search and examination by USPTO examiners may actually limit application pendency over time.

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[5] "Key Processes for Managing Patent Automation Strategy Need Strengthening," U.S. Government Accountability Office Report No. GAO-05-336, June 2005, pages 14–15.

Providing examiners with additional time should also benefit the entire nation by reducing the costs of patent litigation. In a recent study by the National Research Council of the National Academy of Sciences, John L. King calculated that providing examiners with a one-hour increase in time would cost the agency about $11.3 million. King calculated, however, that a one-hour increase in examiner time would reduce patent litigation expenses by over $17 million.[6]

Increasing the quality of patent examination, reducing patent application pendency and stimulating the nation's economy by reducing the costs of patent litigation thereby freeing up resources for other purposes, are clearly worthy goals of the intellectual property community. It should be equally as clear that providing examiners the time needed to do a good job is the most cost-effective means to accomplish these goals.

A GOOD JOB TAKES GOOD TOOLS

The major criticism on the quality of the USPTO's work revolves around the failure of examiners to find the most relevant prior art. But examiners only have a very few hours to search the prior art and identify relevant references. They need search tools that allow them to search and find the most relevant prior art in the shortest possible time. Here again, the USPTO's heavy reliance on text searching has proven very shortsighted.

While planning the agency's new complex in Alexandria, Virginia, the USPTO made a conscious decision to eliminate support for the vast amount of examiner paper search files. These paper search files, known as "shoe files" or "the shoes" from early days when copies of issued patents were kept in shoeboxes, contained copies of the U.S. patents classified according to the U.S. Classification System. The paper search files also contained foreign and non-patent literature classified and placed in the shoes over the years by examiners in the various technologies. Many references in the shoes contained additional information such as examiner notes and/or color drawings placed there by experienced examiners to assist other examiners working in that technology. For many years prior to the advent of automated search tools, the paper search files represented the best and most comprehensive search tool for locating relevant prior art. They contained a remarkable wealth of information found nowhere else in the world.

The paper search files allowed examiners to draw from the experience of those examiners who had gone before. For many years, examiners were trained to "feed the shoes." Every pay period, examiners were given a stack of references such as technical and scholarly journals, trade publications, catalogs and other literature. An examiner would be provided time to peruse these references, identify those relevant to his/her technology, and place them in the appropriate paper search files according to the U.S. Classification System, i.e., "feed the shoes." In addition, examiners would often add notes and other helpful information to these references to aid themselves and others searching in a particular technology. This continuous process resulted in a comprehensive database of prior art only available to those at the USPTO. In addition, the very act of feeding the shoes helped examiners to keep current on developments within their respective technologies. When new examiners searched the paper search files, they were receiving the benefit of the knowledge and experience of all those examiners who had preceded them in the technology. This helped new examiners develop familiarity with the prior art and helped all examiners in quickly and efficiently finding the relevant prior art for each patent application.

Regrettably, as far back as the mid-1980s, the USPTO began transferring classification duties from examiners to technicians. As time went on, management ordered that foreign patents and non-patent literature would no longer be included in reclassification projects. This rendered these documents all but useless for searching. By the mid-1990s, as planning for a new headquarters facility began in earnest, support for the U.S. Classification System and maintenance of the paper search files had virtually ended.

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[6] King, John L., "Patent Examination Procedures and Patent Quality," *Patents in the Knowledge-based Economy,* National Research Council of the National Academies, National Academies Press, 2003, pages 54–73 at pages 68–70.

Today, the paper search files have all but disappeared at the USPTO. The agency removed all the copies of issued U.S. patents in preparation for its move to its new Alexandria, Virginia headquarters. While the remaining foreign and non-patent literature paper search files were moved to the new headquarters, no new references are being classified and placed in those files and their ultimate fate remains uncertain. At present, those files are stored in the basement of the new facilities but the agency is contemplating the removal of at least some of those files to free up critically needed space. Sadly, new examiners are not even formally trained to use the paper search files. The only formal agency training new examiners receive is in the use of the automated search tools.

The end result of the agency's failure to maintain the U.S. Classification System and the paper search files is that examiners can no longer benefit from the wisdom and experience of prior examiners. Today, each search in a patent application is performed essentially from scratch. The agency's emphasis on text searching is resulting in a new generation of patent examiners inexperienced in the use of the U.S. Classification System.

Another major perennial frustration for examiners is the agency's continued unwillingness to expend the resources to complete the process of getting all issued patents into a single text searchable database. With the advent of the Automated Patent System in the mid-1980s, the USPTO began entering all new issued patents in both text and image searchable form into its issued patent database. Unfortunately, while all issued patents were entered in image format, the text-searchable database only goes back to about 1970. Issued patents prior to 1970 have not been entered in the database in a readily text searchable form. The agency did submit these older patents to optical character recognition but did not correct errors and did not index this database in the same manner as the Automated Patent System database. Thus, this database, referred to by examiners as the "dirty OCR file" because of its numerous errors, cannot be readily and reliably searched simultaneously with the Automated Patent System database. Examiners working in older technologies have to perform two searches of the issued patents to determine patentability of an applicant's claimed invention. This is one more uncompensated drain on examiners' time.

The current Administration has relied heavily on outsourcing many government duties. Indeed, many duties at the USPTO have been outsourced to private sector contractors. Rescanning and indexing the "dirty OCR file" so that all issued patents can be searched in one database is a duty begging for outsourcing. The agency has proposed a major initiative to outsource the entire search duties of examiners, an initiative of dubious merit, while not expending the resources to perform a one-time duty that would have clear positive results. POPA believes the USPTO needs to reverse its virtual abandonment of the U.S. Classification System. It needs to improve its automated search tools to allow examiners to "feed the shoes" in an electronic environment, i.e., provide the means for classifying and adding relevant prior art to the USPTO's automated databases, and provide examiners the time to do so. This would once again allow examiners to benefit from the knowledge and experience of other examiners. The agency needs to actively seek the input of employees in the development and testing of automated tools to increase the likelihood of successfully deploying functional and efficient products. Finally, POPA believes the agency needs to do a better job of prioritizing all its automation expenditures to insure that the agency and the American people receive the maximum benefit from those expenditures.

A GOOD JOB TAKES A GOOD WORKFORCE

An agency can provide all the time and all the best tools available to do a top-notch job, but without a well-trained and dedicated workforce, those tools and that time will not be enough to get the job done. The need to hire, train and retain a highly skilled workforce has been a perennial problem for the USPTO. In their book, *Innovation and Its Discontents,* Adam B. Jaffe and Josh Lerner provide a brief history of hiring and retention problems at the USPTO dating all the way back to 1829.[7] As the authors recognize, however, this problem has become much more acute recently in view of the increasing importance of intellectual property in a global economy. A lack of adequate funding coupled with the feelings of some in the Senate that the USPTO should not try to hire its way out of its pendency problems resulted in sporadic and insufficient hiring of new examiners over the last ten years. Indeed, in FY 2003, the agency suspended patent corps expansion altogether, choosing to hire only to compensate for attrition. This sporadic hiring process has left the agency with a significant shortfall of trained examiners and a burgeoning backlog of over 550,000 unexamined patent applications.

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[7] Jaffe, A. B. & Lerner, J., *Innovation and Its Discontents,* Princeton University Press, 2004, pp. 133–138.

The USPTO's need to hire and retain new examiners has been the subject of several recent government studies. In 2002, the Dept. of Commerce Inspector General issued an illuminating report on needed improvements in the USPTO hiring process.[8] The Inspector General identified several challenges facing the USPTO in hiring new examiners: a shortage of potential examiners with the necessary technical training, competition for jobs by the private sector, compensation packages smaller than private sector compensation, and competition from other federal agencies.

The Inspector General also identified several significant reasons why examiners leave the USPTO. Seventy two percent of all examiners left the USPTO for one of the following reasons: dissatisfaction with the production-oriented nature and inflexibility of the job (26%); unsatisfactory performance or conduct (23%) and higher pay (23%). In POPA's experience, the vast majority of disciplinary actions at the USPTO are the result of unsatisfactory production or quality, i.e., performance issues. This has been confirmed by the National Academy of Public Administration Report of August 2005.[9] Therefore, most of the 23% of examiners in the second category are likely analogous to those who left because of the nature of the job. Thus, almost half of all examiners who leave the agency do so because of their dissatisfaction with the production-oriented culture of the USPTO.

Of all examiners who leave the agency, approximately half leave within their first three years on the job, with thirty percent having less than one year's experience. POPA is aware of instances this year where new examiners have left the USPTO within the first several weeks in the agency. Of potentially greater impact, however, is that more and more mid-career employees are leaving the agency. In FY 2005, approximately forty percent of all those expected to leave will be employees with between three and fifteen years experience. Some of these employees are leaving without even having another job to go to. The agency's most serious problem is not hiring new examiners—it is keeping them.

Over the years, the USPTO has implemented a number of employee benefits such as special pay rates, alternative and flexible work schedules, a family friendly workplace and transit subsidies. While employees appreciate the many benefits offered by the USPTO, these benefits are not, by themselves, sufficient to overcome many employees' overriding dissatisfaction with the production-oriented nature of patent examining. The appeal of the USPTO's many benefits is in constant opposition with the unrelenting stress of the day-to-day "legal sweatshop" environment of the agency. As retention statistics show, the unrelenting stress of the job often trumps all the benefits of the agency and takes its toll on employees causing them to leave the agency voluntarily or, on many occasions, involuntarily.

The USPTO must constructively and effectively address this issue of job dissatisfaction or retention of examiners will remain a serious problem for the foreseeable future. The agency must accept the fact that examiners need more time to do the job or they will ultimately seek employment elsewhere. Training new examiners is both resource and time intensive. It takes about five to six years for an examiner to reach primary examiner status and act independently. It is primary examiners who are the most productive employees in the agency. It is primary examiners who train and mentor new examiners. It is primary examiners who go on to become supervisory patent examiners and other management officials at the USPTO. POPA believes that it is cost effective to provide examiners more time to do their work so that the agency can retain those employees and benefit from their experience for years to come.

POPA is particularly concerned with the involuntary departure of employees through disciplinary actions by the agency. As the exclusive representative of patent professionals at the USPTO, POPA is often called upon to defend employees against agency allegations of poor performance or misconduct. And the USPTO keeps POPA very busy.

At a time when everyone is expressing serious concern about the USPTO's problems retaining examiners, the agency may well be the most ruthlessly effective single agency in the entire Federal government in removing its employees from the Federal workforce. In its August 2005 report, the National Academy of Public Administration published some very disturbing statistics on the agency's increasing number of performance-based disciplinary actions against employees.[10] In FY 2001, a total of 210 non-defense Federal employees were removed for poor performance in the entire Federal government. Eighteen of those 210 came from the USPTO. Almost ten percent of all employees fired for performance in the Federal government were fired by the USPTO! While the Federal government as a whole only fired 1in 5,000 employees, the USPTO was busy firing 18 in 3,000 patent examiners. The USPTO fired three times more employees in one year than the U.S. State Department did in seventeen years from 1984 to 2001 (six employees). This is a remarkable number of firings for a relatively small government agency.

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[8] "Patent Examiner Hiring Process Should Be Improved," U.S. Dept. of Commerce Office of Inspector General Final Inspection Report No. BTD-14432-2-0001, March 2002.

[9] NAPA Report, August 2005, pages 110–111.

[10] NAPA Report, pages 108–111.

The National Academy of Public Administration report had other equally troublesome statistics that demonstrate an alarming increase in performance-based disciplinary actions at the USPTO. The report shows that between fiscal years 2000 and 2005, the USPTO workforce grew from 6,367 to 6,763 employees, an increase of 396 employees. At the same time, the number of employee relations cases grew from 585 to 928. Incredibly, for those fiscal years, the USPTO took more than twice as many employee relations actions as the number of employees it had hired. For the USPTO patent corps, oral warnings, a form of disciplinary action immediately preceding a written warning, have gone from 70 in FY 1999 to 329 in FY 2004. Written warnings, a form of disciplinary action immediately preceding removal from Federal service, have risen from 19 in FY 2000 to 48 in FY 2004. As of February 2005, the USPTO had already issued 31 written warnings. From FY 1999 to the beginning of FY 2005, the USPTO fired 183 probationary employees—5.7 percent of the 3,216 people hired. By comparison, for fiscal years 2001 and 2002, the Federal government as a whole only fired about three percent of new hires.

The USPTO's aggressive approach to employee relations is not lost on examiners. Rather than being beneficial to the agency, this approach further demoralizes its employees and heightens the stress in an already stress-filled workplace. The agency's willingness to terminate employees hangs like a sword of Damocles over the examining corps every day.

In their report, Academy investigators state that USPTO management attributes this astounding increase in personnel actions to liberalized time scheduling such as the Increased Flexitime Program that allows examiners considerable flexibility in their work schedules.[11] POPA finds this assertion laughable. Nothing in the Increased Flexitime Program changed one iota of examiners' production requirements. It does not matter when examiners are physically in the office. What matters is that, when they are in the office, they have to produce. Management's assertion is simply reflective of its outdated perception that it must have more control over examiners lives.

This need for control is the same pervasive mentality that has significantly delayed the introduction of telework programs in the USPTO and throughout the Federal government. Contrary to the USPTO's assertion, the Increased Flexitime Program is one employee benefit that is actually doing what it needs to do—providing examiners a reason to stay at the USPTO. Sadly, at a time when the USPTO needs its employees the most, agency management has already signaled its intent to curtail this immensely popular program in upcoming contract negotiations.

If the Increased Flexitime Program is not the reason for so many personnel actions, what is? A brief review of recent USPTO history reveals several major events that have severely impacted examiners' ability to do their job in the allotted time: a change of USPTO administration; the implementation of the Image File Wrapper System; loss of the paper search files; disruption associated with the move to new headquarters; and the introduction of Quality Initiatives arising from the 21st Century Strategic Plan.

The USPTO's top-level management changed in 2001 concurrent with the change of the Presidency. The new management team under Director James Rogan took a decidedly more negative slant towards employee and labor relations. This new direction is clearly apparent in the linear increase in employee relations actions from FY 2001 to the present shown in Figure 4–3 of the Academy's report.[12] The "culture of collaboration" found in the previous USPTO administration quickly degenerated into a "culture of conflict" under Director Rogan. This, dramatic change in USPTO culture resulted in a serious decrease in morale among USPTO employees.

In addition to the change of administration, the deployment of the Image File Wrapper system had considerable impact on examiners. As already discussed above, the Image File Wrapper system added significant time drains for examiners. Especially hard hit are examiners who have found the continuous use of computers necessary with the Image File Wrapper System to be very hard on them physically. Unfortunately, many of these examiners are among the most senior primary examiners and highest producers in the agency. The production of many of these senior examiners has suffered significantly using the Image File Wrapper system.

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[11] NAPA Report, August 2005, page 108.

[12] NAPA Report, August 2005, page 109.

The loss of the paper search files also impacted many examiners. Some primary examiners were so familiar with the paper search files that they had memorized virtually every patent in their technology. This even included knowing in which shoe, i.e., file drawer, a particular patent was located. This enabled them to quickly search an application and rapidly determine the patentability of a claimed invention. With the loss of the paper search files, examiners now have to rely on the automated search tools to identify relevant prior art. The automated tools, however, do not readily lend themselves to the kind of familiarity with the art that many examiners had previously. Again, this has negatively impacted the ability of many examiners to get the job done in the time they are given.

Another significant impact on examiners has been the disruption in their daily lives associated with the USPTO's move to its new headquarters in Alexandria, Virginia. This move began in December 2003 and was finally completed in July 2005. During this time, examiners have experienced numerous power outages, computer network failures, complete shutdowns of the headquarters facility often preventing employees from doing additional work on weekends, and the loss of many of the benefits and amenities present at the previous location in Arlington, Virginia. Doing a mentally intensive job such as patent examining does not lend itself well to such day-to-day disruptions in routines. Unfortunately, the USPTO is already outgrowing its new headquarters facility—something POPA had warned for years before the new facility was even built in Alexandria. Virtually all junior examiners are being doubled up in offices. The agency is actually contemplating training new examiners at an "undisclosed location" away from the headquarters facility for their first six to eight months because it does not have adequate space to house them nor does it have sufficient numbers of primary examiners in critical technologies to train them. Once again, patent examiners are being expected to continuously pay for the shortsighted decisions of USPTO management.

Finally and, arguably, most significant has been the profoundly negative effect on examiners due to the implementation of the Quality Initiatives of the USPTO 21st Century Strategic Plan. The Quality Initiatives represent a number of initiatives such as "recertification of primary examiners," "in-process reviews" and "second pair of eyes" intended to improve the quality of examination. The Quality Initiatives have taken the "culture of conflict" at the USPTO to new extremes and seriously impacted examiner morale. Indeed, a number of examiners have resigned or retired from the agency rather than put up with this management assault on their integrity and professionalism.

For many years, agency management made it clear to employees that production was "Job One" at the USPTO (apologies to Ford Motor Co.). Quality was a distant second. Supervisors made sure examiners understood that as long as their production was high enough, they could be fairly certain that their jobs were secure. At the USPTO, quantity far exceeded quality in importance. Examiners knew that, to maintain a healthy production level, that shortcuts would have to be taken and corners cut. This was not a problem so long as production remained "Job One."

With the introduction of the 21st Century Strategic Plan, however, management suddenly reversed direction and promised Congress and the entire intellectual property community that quality was now going to be "Job One" at the USPTO. Suddenly, all the shortcuts examiners had learned and all the corners they had cut in order to get the job done had all but evaporated. Management implemented the Quality Initiatives but, once again, made no adjustments to examiners' goals to allow for this sudden change in emphasis.

Today, examiners at every level of experience are finding themselves angry, frustrated, insulted, bitter and fearful for their jobs. They are looking over their shoulder constantly for fear that reviewers will allege an error in their work. If all the other stresses in the USPTO workplace weren't enough, the Quality Initiatives may well be the proverbial straw that broke the camel's back.

It is no secret that patent examining is an inherently subjective undertaking. If it weren't, there would be little need for applicants and courts to expend so many resources on patent litigation. Two highly skilled and experienced examiners can look at the same patent application and reasonably come to different conclusions on the merits of the case. A patentee and a potential infringer will very likely interpret the issued patent differently.

Just because two reasonable people disagree on something does not make one wrong and the other right. Unfortunately, this fact is often overlooked by USPTO management during the numerous review processes currently in place. Today, an examiner's decisions are being constantly criticized by reviewers who, as often as not, have little familiarity with the examiner's particular technology. If the examiner does not want to be charged with an error, the examiner must spend a great deal of time defending the action. Many alleged errors of examiners are actually nothing more than a subjective difference of opinion between two patent professionals. At mid-year of FY 2005, forty percent of reviewers' alleged errors were being reversed by the USPTO once the examiner defended the action. Unfortunately, by the time the error is reversed, both the examiner and the agency have lost the production time and the agency now has an angry demoralized examiner on its hands. While POPA certainly supports improving the quality of patent examination, examiners believe the agency's implementation of the Quality Initiatives is not the best way to achieve it. POPA believes the Quality Initiatives are doing far more harm than good.

All the issues discussed above are adversely affecting examiners ability and desire to do the job. Any one of these events would impinge on examiners' time to do the work, but each one by itself might not be sufficient to convince an examiner to leave the agency. Unfortunately, all of these events are occurring relatively concurrently and, taken together, have left the examining corps angry and stressed. The effects of these events are being manifest by rising attrition and alarming increases in personnel actions at the USPTO. If the agency does not take steps quickly to reverse these effects, POPA believes that the situation will only get worse.

WHAT DOES AND DOESN'T NEED TO BE DONE

Everyone in the intellectual property community agrees that there are significant problems at the USPTO that need to be fixed. Unfortunately, many of the proposed solutions will have no effect on those problems and may well fall victim to the law of unintended consequences.

To a great extent, the USPTO is a victim of its own success. As the importance of intellectual property has grown, so has the work of the USPTO. When Ford Motor Company released the Mustang in 1964, the new car was an overnight hit. Did Ford sit back and tell potential buyers that they would have to wait two or more years for a new Mustang. No! The company ramped up production as fast as it could, built additional facilities where necessary and did whatever was needed to sell as many Mustangs as it could as fast as it could. Today, the USPTO finds itself in the same position as Ford did in 1964. It has a hit product, the patent, but a shortage of manufacturing capacity to meet demand.

Despite an ever-increasing backlog of unexamined applications and continuous urging from POPA, agency management did not see fit to expend its resources where they would do the most good—expanding the workforce to meet demand. Fortunately, after years of inadequate hiring this is changing. Recognizing the need for more examiners, Congress has mandated minimum staffing levels in FY 2005 and is on the verge of approving further increases for FY 2006. After years of dispute over the diversion of USPTO fees, the agency has finally been allowed to retain its fees for its own needs. POPA applauds these positive actions and hopes that they will continue in the future.

Having the necessary resources and using them effectively are two very different things. This is one area where POPA takes issue with some solutions proposed by the Dept. of Commerce Inspector General and the National Academy of Public Administration.

Contrary to the findings of the Inspector General, the agency does not need to rethink examiners performance plans. If examiners' jobs were as easy as the Inspector General's report implies, the USPTO would not have the attrition problems we are discussing today. It does not need to replace its current awards system with one that is either unattainable by a majority of employees or would reduce examiners' time per application even more. It needs an award system that will encourage even more examiners to strive for an award. Examiner awards are easily one of the most cost effective means at the agency's disposal for increasing production and reducing pendency.

Contrary to the National Academy of Public Administration, the USPTO does not need more flexibility in managing its workforce. The USPTO is very effectively managing many examiners right out the door. It is already bypassing employees' civil service rights and extending its ability to summarily remove new employees to two or three years by using the Federal Career Intern Program as a subterfuge for standard Federal hiring practices. Instead, it should be using its creative energies to make sure that new employees are well trained and engaged in the workplace.

The USPTO does not need to gain more power to limit the activities of its labor unions. It needs to work with its unions to empower employees and tap into the wealth of knowledge, skills and experience of its workforce. When POPA and the

USPTO work together as a team instead of fight each other as adversaries, we increase the likelihood of improving employee morale and solving retention problems.

The USPTO does not need to isolate its new examiners in some off-site facility where they have little interaction with other examiners in their technology. Examining has a very steep learning curve and new examiners need exposure to many examiners to learn and understand that there can be many right ways to approach the job. Instead, the USPTO should be immediately acquiring more space to allow expansion of the agency to meet its hiring needs. It is possible that much of the agency's old space in Arlington is still available and could be rented. This space is already wired and configured for USPTO use.

The USPTO does not need to spend countless resources negotiating a new collective bargaining agreement that reduces or eliminates many of the benefits and protections employees currently enjoy. This will only serve to antagonize employees and make even more of them explore other employment options. When you need every employee you can get, angering and demoralizing your workforce is not effective management. Instead, the USPTO should respect its employees and honor both the spirit and the letter of its existing collective bargaining agreements.

This Subcommittee can also help to insure that the USPTO targets its resources to its basic mission of examining. POPA recommends that you amend 35 U.S.C. § 42 by including in H.R. 2791 a provision that requires the agency to use all of the excess claims fees, excess specification fees and information disclosure fees to fund additional examining time for examiners to do the extra work for which applicants are paying the fees. In Section 42, Congress has instructed the USPTO to limit the use of trademark fees for the examination of trademark registrations. It is time to expand that precedent to patent fees.

Mr. Chairman, Members of the Subcommittee, the USPTO has one of the most highly skilled and dedicated workforces in the Federal government. Every examiner is a college graduate trained as an engineer or scientist. Many have postgraduate degrees and/or law degrees. They have other employment options if they choose.

If the USPTO truly desires to reduce attrition, it must effectively address the reasons that most examiners leave—job dissatisfaction and higher pay. It must recognize that examiners are skilled professionals and deserve to be treated as such. It must realize that, as professionals, examiners want to do a good job they can be proud of. It must give them the time, the tools and the space to do that job. It must pay them a reasonable and competitive salary that, coupled with the many other benefits at the agency, will make the USPTO a much more desirable workplace. It must reestablish its credibility with employees by honoring its collective bargaining agreements. It must return to a culture of collaboration, not a culture of conflict.

Unless and until the USPTO addresses these problems, the revolving door of attrition will continue to spin.

Mr. SMITH. Mr. Van Horn.

TESTIMONY OF CHARLES VAN HORN, FINNEGAN, HENDERSON, FARABOW, GARRETT, AND DUNNER, LLP

Mr. VAN HORN. Thank you, Mr. Chairman. I am pleased to have this opportunity to express my views on U.S. Patent and Trademark Office operations and the subject reports. I am here today representing myself as a private practitioner, and the views I express today are my own. I will note that I had the pleasure and honor to serve as a panel member on the report of the National Academy of Public Administration.

The PTO faces significantand unprecedented challenges to meet expectations of issuing valid patents in a timely manner. It needs and deserves continued support of Congress and the patent community to enable it to accomplish these important missions.

Ever since I joined the Patent Office in 1964 as a patent examiner, it has always been concerned with both the number of applications processed in a timely manner, and the quality of work associated with the examination of each application.

Given the growing number of applications being filed, the existing inventory of unexamined applications, and the examining resources available to it, the PTO is struggling to accomplish acceptable results in both the quantity and quality of its work products.

Despite the best efforts of the PTO, which includes the recent hiring of a huge number of new patent examiners, pendency has been, is, and will continue to increase in the near term. As the NAPA report points out, at least one contributing factor to this increase has been the diversion of funds paid by users of the patent system to activities other than the support of the PTO.

The PTO should be commended for its efforts to identify unnecessary and avoidable work or rework. However, before it seeks to limit the number and availability of continuing applications, it should conduct a study of these applications, when, why and in what technologies they are being filed, to determine the most responsible way to reduce their numbers.

At least one key to building a competent examining staff is the ability to hire, train, and, most importantly, retain competent people who are dedicated to doing a quality job in a reasonable amount of time. The NAPA and GAO reports acknowledge recent steps taken by the PTO and have made additional suggestions that may assist in attracting and retaining larger numbers of outstanding examiners.

The PTO should be commended for the steps it has taken in addressing at least the perception in the decline of the quality of its work. It has initiated unprecedented reviews of the competency of patent examiners and reviews at all phases in the patent examining process. These reviews can be justified to the extent that they add to the quality of the work product and to the education of examining staff.

There is at least some evidence, however, that the PTO has overreacted in many instances and is now denying patents without technical or legal justification. In many of these cases, appeal is not available, because the PTO keeps changing its position to avoid a review of its action.

The PTO has taken appropriate steps to improve both the quality and timeliness of actions in reexamination proceedings, and to eliminate or substantially reduce the cost of unnecessary appeals in a timely manner. Unfortunately these steps will divert scarce experienced examining resources from the job of training and supervising the growing number of inexperienced examining staff.

We should continue to support efforts of the PTO to provide a quality examination of all applications in a timely manner, but recognize the process is not and will not be perfect. That reality is at least one reason that the patent system must have postgrant processes such as reissue and reexamination, and possibly opposition, to provide an opportunity for the PTO to reevaluate its decisions on a new and perhaps more robust record.

In closing, Mr. Chairman, I want to thank you and Members of your Subcommittee for the continuing efforts to improve the patent system and support the PTO. I thank you for the opportunity to present my views.

Mr. SMITH. Thank you, Mr. Van Horn.

[The prepared statement of Mr. Van Horn follows:]

PREPARED STATEMENT OF CHARLES VAN HORN

Dear Mr. Chairman:

I am pleased to have this opportunity to express my views on U.S. Patent and Trademark Office (PTO) operations and the subject reports. I served for 31 years in various capacities in the PTO until my retirement in February 1995. I am currently a partner in the intellectual property law firm of Finnegan, Henderson, Farabow, Garrett & Dunner, LLP in its Washington, D.C. office and have had the pleasure to serve as a panel member on the Report of the National Academy of Public Administration (NAPA): U.S. Patent and Trademark Office: Transforming to Meet the Challenges of the 21st Century (August 2005). As a 31-year employee of the PTO and a member of the Patent Bar, I have a keen interest in and concern for operations of the PTO. The views I express today are my own, and do not necessarily represent those of any member of our firm , its clients, or any of the organizations with which I am associated. As my background and experience focuses on the patent side of the PTO, I will confine my remarks to the patent operations.

It is significant that the background of this oversight hearing includes several reports from the General Accounting Office, Inspector General, and National Academy of Public Administration. The fact that these organizations have a significant interest in the operation of the PTO and have provided recommendations for the improvement of PTO operations is a good thing. The PTO plays a critical role in the maintenance of a robust economy. It both needs and deserves the long term and consistent support of Congress to enable it to accomplish this role.

The PTO faces significant challenges in its patent operations. While several of the reports focus on problems in PTO operations, we should acknowledge and do appreciate its accomplishments and the efforts being made to improve the patent process.

Ever since I joined the Patent Office in 1964 as a patent examiner, the Office has always sought to maintain and improve both the quality and quantity of work produced by its examining staff. Arguably, the emphasis may shift from time to time, but the interest in both the number of patent applications processed in a timely manner and the quality of work associated with the examination of each application, have remained focal points for patent operations for at least my association with the patent system for over 40 years. Today, the PTO is facing unprecedented challenges in accomplishing acceptable results on both of these critical goals.

Pendency is one key measure that the PTO uses to assess the timeliness of examination of patent applications and it is on the rise. First action pendency now exceeds 20 months—the average time period from the filing of a patent application to the mailing of a communication from the examiner after consideration of the patent application. This pendency to first Office action actually exceeds the total pendency (i.e., the time between the filing of the patent application and the final disposition of that application typically by the granting of a patent or abandonment by the applicant) that was achieved in 1989 when the average pendency to final disposition was less than 19 months. Pendency is highly dependent on the patent examiner resources available in the PTO to address the inventory of unexamined applications, including new applications that are filed every week. Despite the best efforts of the PTO, which includes the recent hiring of a very large number of individuals as new patent examiners, pendency is on the increase and will continue to increase in the near term.

Experience has shown that when the PTO pendency increases, coupled with an increased volume of filing of new applications, it is more difficult to reverse the trend of increased pendency than to maintain it at a particular level. One of the principal reasons for this difficulty is that it typically takes several years to train an individual to be a primary examiner—an examiner who is granted independent authority to make a final decision on whether or not to grant or deny a patent. As noted in the NAPA Report, hiring a large number of inexperienced examining staff in selective years is not as efficient or effective as consistent hiring. The influx of a large number of new individuals as patent examiners requires that the activities of experienced examiners be diverted to educate the new examiners, both formally and through on-the-job training. Since these large numbers of new hires are rarely distributed evenly throughout the patent examining corps, the burden typically falls in those areas having the greatest need for additional examining resources, and typically suffering from the least number of experienced examiners.

While it is probably no surprise to members of this Subcommittee, the continued diversion of PTO fees to other than PTO operations over the years has contributed, at least in part, to the unfortunate predicament of the PTO. As noted in the NAPA Report, if the PTO had been given access to the fees paid by users for PTO operations, and assuming that most of these diverted fees would have been used for patent staffing, the current uncontrolled rise in pendency would not have occurred to the extent we experience today, and the pendency to first action would have remained at an average of 12.6 months achieved in the 1992 time frame.

It is encouraging that the PTO has been permitted to use most of its fee income in 2005 for PTO operations. However, we cannot expect the PTO to turn this pendency ship around based on funding in a single year. Nor do I expect that the PTO is able to absorb 700 to 800 new examiner hires each year without risking an overall decrease in the quality of examination. There are simply not enough really good examiners who can educate, train and supervise the activities of that number of new hires. The PTO has excellent people; there are just not enough of them to handle such an increase in examining staff each year, even if qualified candidates were available.

The NAPA Report contains several recommendations that can be used to address the long-term challenges of the PTO in hiring, training, and retaining its skilled examining staff. The PTO should be encouraged to consider and at least evaluate pilot projects of outsourcing searching of prior art used in determining the patentability of an invention. On the other hand, it must be noted that other offices, such as the European Patent Office, that have experience in separating the search and examination function have found that it is not an efficient way to examine a patent application. Accordingly, it may not be realistic to hope for any real gains from this initiative.

Eliminating unnecessary "rework" also offers another opportunity to increase the efficiency of the patent examination process. Based on the number of continuation applications filed and the number of times an applicant requests continued examination of a patent application, the PTO has suggested that 25% of the examiners' work in 2004 could be described as "rework." While there is no doubt some unnecessary rework is contained in the 25% of the applications identified by the PTO, it would be a serious mistake to attribute the entire 25% as constituting unnecessary "rework." There are many reasons for filing a continuation application or requesting continued examination. Some are associated with a strategic decision by the patent applicant to obtain a certain level of protection for the invention described in the first application. Some may be attributed to reasonable differences between the patent examiner and an applicant as to the scope of protection, and applicant elects to file a continuation application to provide more relevant evidence to the PTO. Some continuations are caused by the Office in failing to fully appreciate or understand the claimed invention, or not finding the best available prior art until late in the examination process or perhaps from a search report from another office in a counterpart application. Before any action is taken by Congress or the PTO to limit the number or circumstances in which a continuation application can be filed, a study should be conducted to determine why applicants elect to proceed in this manner and the technologies in which this procedural expedient is most often employed.

While the quantity of work produced by patent examiners and the average pendency in any PTO work unit or technology can be easily determined, the measurement of the quality of examination is more difficult. Responding to a growing concern about a decline in the quality of examination, the PTO has taken several important steps to address at least the perception of a decline. Some of these steps are unprecedented in my experience, such as the recertification of experienced examiners. Collectively, these steps seek to identify and address training needs, evaluate the quality of examination during the examination process, enhance the reviewable record, and expand reviews of the work of all examiners, regardless of their authority to act independently. These initiatives, both individually and collectively, should assist the PTO in identifying training needs and improving the overall quality of examination.

One concern that has surfaced on a rather frequent basis is that the PTO is overreacting in its implementation of these initiatives and is motivating examiners to issue rejections that are not supported in law or fact simply to avoid making a decision to grant a patent. One gets the impression sometimes that valuable resources are being wasted as the checkers are checking the checkers where there has been no identifiable concern for the quality of examination.

Nonetheless, the PTO has recently adopted several initiatives that address longstanding problems in patent processing. Specifically, a new reexamination unit has been created that would focus the activities of the PTO in reexamination proceedings with a selected group of examiners, rather than having these unique proceedings distributed throughout the patent examining corps. This initiative should lead to better management of these proceedings and result in more reliable patentability decisions. A second example of significant PTO responsiveness is the adoption of a pre-appeal brief conference to review final rejections of an examiner before the filing of an appeal brief becomes necessary. Statistics showed that for every 100 appeal briefs that had been filed, only 38% of those appeals were followed by the examiner filing an Examiner's Answer, the next step in the appeal process. In 62% of these cases, the prosecution was either reopened by the examiner or the application was allowed. The concept of a pre-appeal brief conference should save applicants significant resources in time and money in the appeal process.

While the PTO should be applauded for these initiatives, they unfortunately demonstrate a loss of faith in the ability of the average primary examiner or supervisor to make a correct patentability decision in a timely manner. While these initiatives are regarded as good news for those using the reexam and appeal procedures, they will divert scarce experienced examining resources from the job of training and supervising the growing numbers of inexperienced examining staff. Until the PTO can find ways to build its experienced staff, it may well be forced to make decisions as to its priority in addressing the quality of examination in unique situations as opposed to improving the overall quality of examination by examiners in general.

Ever since the PTO adopted the initiative to achieve patent processing improvements through the use of information technology in 1981, it has fallen short of some of its goals. Specifically, and probably most visible to the patent community is the absence of a user-friendly electronic filing and processing system. In spite of this failure, however, the PTO has come a long way and made significant contributions to patent applicants, practitioners, and the public in many patent automation initiatives. The access to full text of patents and published applications and prosecution histories of recent applications has been a tremendous service to the user community. The PTO website contains a wealth of information on all aspects of its operations that is accessible and a significant benefit to all users of the patent system.

In general, the PTO staff is very responsive to members of the public and the patent community. Responsiveness is the rule, rather than the exception, and the PTO should be commended for its efforts in maintaining the climate and culture of service to the public.

I want to thank the members of this Subcommittee for their continuing efforts to improve the patent system and to support the PTO in its important mission. Thank you for the opportunity to present my views.

Mr. SMITH. Director Dudas, let me direct my first couple of questions to you. You know what Members of Congress want, you know what inventors and creators and artists across America want, and that is better patents sooner.

When you look at the past 10 years, we see that the number of patents approved has increased almost 100 percent, say, at an average of 9 or 10 percent a year. In your testimony you say for the next few years you're going to be increasing the number of patent examiners by about 25 percent a year.

That being the case, and getting away from future projections, but getting just sort of past history, it seems to me that the number of patent examiners is probably going to increase faster, the rate, the percentage, will increase faster than the percentage increase in patent applications or patents approved. Therefore, why wouldn't we expect pendency to decrease and quality to increase?

Mr. DUDAS. You would expect pendency——

Mr. SMITH. And also, also rolling in the improvements and efficiencies recommended by the GAO, if they are implemented, why wouldn't all of that argue for some improvement in those tiers?

Mr. DUDAS. It does argue for improvement. There is a constant tension between pendency and quality. I think you will hear that from a number of witnesses. You can double the amount of time, you can cut the amount of time in half. No one would ever, I think, suggest you cut the amount of time in half to—you will decrease pendency dramatically. You would have no quality.

But when I showed you the curve, the red line going up, that would have happened with status quo. With the kind of dramatic hiring that we are now proposing——

Mr. SMITH. That's true, except the status quo was just based on the last 2 or 3 years. I am not sure that I agree with that accurate projection of the number of patents. If you look at the longer trend, it's not going to go up quite that fast. That was my basis for hoping for some improvement.

Mr. DUDAS. Well, that's—I think that what we are looking at right there—I'm sorry, if I point to the screen, it is me. But if I can go to that chart there, the red line is really the best efforts you can have right now. I mean, that is a 6 percent growth rate on the red line. Again, that is status quo. I'm not coming here telling you that is what we intend to deliver. What we plan to deliver is the yellow line.

Mr. SMITH. I saw your chart. I was quibbling with your chart a little bit on the basis of the percentage increase in patent examiners versus the projected increase in patent applications.

Mr. DUDAS. Well, that's—I will try to hit that directly. The red line that you saw, we are not—in that line we would only be doing attrition hiring. We would not be seeing a decrease in pendency for that reason.

The yellow line is giving you the dramatic new hiring increases, 1,000 a year. Again, if we have a 6 percent, you see pendency does start to turn the corner and then begin to come down.

Now, why does it not happen instantly? That is really because of the way pendency is measured. Pendency is measuring retroactively. When we say there is 30 months' pendency, you're saying that the patent that is issued today came in our office 30 months ago.

So I can show you—next chart. The third chart shows you what the hiring increases will be. The red line is the hiring increases at 1,000 a year.

I think what—you want to measure progress today. Let me take you to the fourth chart. You see under the red line? That is what our production would be, the red bar charts, if we didn't hire. The yellow shows how much more we will produce, how much we will increase.

Mr. SMITH. I think I'm more optimistic than you are. If you go back to that red line again, you are projecting out that red line for years to come on the basis of 1 year's increase. And if you look at the increases that I am talking about over several years for your time, that red line would come down. So I am more hopeful perhaps than you are.

Regardless, you know the standard by which you're going to be judged, which is pendency going to increase or decrease, and is quality going to increase or decrease? I simply hope you can produce like you think you can. Good.

Ms. Mittal, let me—you've made a number of recommendations to PTO. I think they have implemented about half, and yet you have said that you, in a number of areas, consider PTO to be at risk. Those are your words. How much confidence do you have that PTO will implement the other recommendations that they have not to date?

Ms. MITTAL. Based on the work that we done over the last 10 years at PTO, we know they take our recommendations seriously. But the fact is that after 12 years, some of the same problems that we identified with their IT implementation strategy are still in existence today.

Mr. SMITH. Do you think the new management is going to improve things?

Ms. MITTAL. Director Dudas has made it very clear that he takes our recommendations very seriously, that he is very aware of the weaknesses in the management controls that PTO has over its IT investments. We are hopeful that he will actually be able to take these recommendation that we've made and actually implement them. We will continue to monitor their progress.

Mr. SMITH. Director Dudas, that reminds me of another question I had for you. Speaking of quality, explain to me why it is—I worry about the nonobvious standard being sort of watered down, to say the least. And you have a situation where the PTO has approved patents for a peanut butter and jelly sandwich, they approved a patent for the swing. You have got the controversy with BlackBerry where perhaps a patent that may or may not—should have been issued is going to cost some company hundreds of billions—well, billions of dollars. How do you guard against that in the future?

Mr. DUDAS. Well, I think one thing I can tell you, and it's in many of the examples you mentioned there, there are—the system works. There are efforts for reexamination. There are areas where we can go where you look into these.

There are efforts within the office where you can appeal cases, and outside of the office. But I think the heart of your question is what are we doing about quality? We have had a number of initiatives put in place. I think the problem in the way we were measuring quality before was we told you how many errors there were, but we didn't understand completely why or how to dissect that.

The quality initiatives we have in place now are in process reviews. We measure more. Some people say we measure too much now. But we measure much deeper. We want to institute what we learned from that and put it into training.

So those quality initiatives have been put in place, and we are evaluating them now. Particularly when you are hiring at the rate we will be hiring, we need to be able to have good measurements, be able to understand how that comes back to support examiners, and learn from the training, learn from the measurements we have, not just report out how many errors there are, but they have them so we can correct them.

Mr. SMITH. Thank you, Director Dudas.

My time has expired. The gentleman from California is recognized for his questions.

Mr. BERMAN. It sounds like leave no patent behind.

Mr. DUDAS. It takes a village.

Mr. BERMAN. Touche.

I do appreciate your efforts sincerely to enhance quality and improve the reexamination process.

I have a question about interparties reexam. When Congress originally enacted this process, our goal was to provide a more comprehensive quality check than ex parte reexam, but something that would serve as an alternative to litigation, which is why we inserted estoppel provisions. As you aptly put it, we need to provide a way to say the office got it wrong without resorting to costly litigation.

The following situation has come to my attention, and as to which, in the very legitimate and understandable search to increase quality of patents, could the office have gone overboard? An interparties reexam is instituted after a district court decision, very costly litigation to both sides. It seems like that contravenes Congress's intent of preventing a second bite at the apple by allowing that to happen, someone to file for interparties reexam. Are we creating additional disincentives for those that question the validity of a patent to ever use the inteparties process in the first instance; that is, before resorting to costly and lengthy litigation?

And in order to maintain a check on quality, you would still have the ability, even if you didn't allow that to happen, to institute an ex parte reexam after litigation, which could be filed at any time. In other words, the person who is challenging the validity of a patent has a choice: interparties reexam.

We don't like the present situation with inteparties reexam because we think the unintended consequences of the estoppel provisions and the limitations on discovery mean there is already some disincentives to utilize that process. But the person who is challenging validity had a choice to go in there and, based upon a review, a preponderence of the evidence standard, get a determination of whether or not that patent was, in fact, really valid.

They decide not to do it. They are sued for infringement. They defend in court. During that whole time they could file an inteparties reexam to stop the litigation and have it stayed while they pursue that alternative. They don't do that. They attempt to prove the patent is invalid by a clear and convincing standard, a tougher standard, and fail. And so the patent is found to be valid, and the individual is found to have infringed.

Now they come in after the district court has decided this issue, after the litigation is over, and say, well, what the heck, now we don't risk anything more in estoppel, and we have already had the benefits of discovery in litigation, we're going back to the Patent Office for inteparties reexam.

It seems to me like that is a case where in the abstract effort, to always be able to look at quality, you are undermining the concept of finality of decisions, and I am wondering if the office is really striking the balance when they allow that to happen.

Mr. DUDAS. Well, you raise a very important point when it comes to the balance, and particularly on interparties reexamination. I can look to a time when I was very happy working on this Subcommittee and working on that. I remember it was a very delicate compromise. But I think you hit the core of this issue, and any other issue, when you talk about finality of decisions and clarity of decisions, what estoppel provisions apply. There are different standards under reexamination versus what they are in court.

But I guess I will make a more general point, which is this is an area of concern in our office. I look to continuation practice as another example of where—I think your question might be at what point do you have finality, what point do you have certainty?

Options are good. There are good reasons for many of the different actions that are taken, postgrant actions that are taken, and continuations practice. But the options may be so open at this point, there are so many options, that we have a question in our office are there too much options, are there too many bites of the apple?

Mr. BERMAN. But you're the one who is—by allowing people to proceed with inteparties reexam after a decision, you are the one who is creating an option that I'm not sure was ever intended by Congress.

Mr. DUDAS. I was assuming—and this is what I will have to do—I will actually try to get some more examples. There are estoppel provisions, and I was assuming that our office was doing what it was legally bound to do.

There are many cases—there are times when the court will stay its proceedings until a reexamination.

Mr. BERMAN. This is after—this is after—at no point did the party who was challenging the validity of the patent ever pursue the interparies reexam, either before the litigation or during the litigation, any of which that——

Mr. DUDAS. Once a reexamination is filed in our office, we feel that we are legally bound to follow through on that reexamination, on every reexamination.

Mr. BERMAN. Even after a district court decision?

Mr. DUDAS. Yes, even after a district court decision.

Mr. BERMAN. Because?

Mr. DUDAS. Because we find that is where the law has taken us. I can come back, and we——

Mr. BERMAN. You accept that there is never any finality?

Mr. DUDAS. Well, there is a—any time a reexamination is filed, ex parte or inteparties, we follow it to its conclusion in our office.

Mr. SMITH. The gentleman's time has expired. Maybe we can revisit this in a few minutes.

The gentleman from California Mr. Issa is recognized for his questions.

Mr. ISSA. Thank you, Chairman.

Director, I will be the opposite side. Congratulations on always looking to the burden that a—that you have, which is that you should never have a patent on your books that is invalid. And if five different ways, five different people bring you five different arguments for why a patent shouldn't have been granted, I would hope that five times you will look at it open and for the first time.

I don't share with—I mean, I do share with Mr. Berman that it may not have been the intent of Congress, but I would like to congratulate your office for assuming, whenever possible, that, you know, the patents can do harm, not just that every inventor is entitled to one. So this may be an example where I'm not going to be saying: How could do you this?

Switching subjects slightly, I am particularly concerned that you don't seem to have tools to bring down biotechnology patent applications to a level that would be acceptable for this new art. At the present time, I understand it is about 27 months, but it can be as much as 8 years. For all practical purposes, you are better off keeping a trade secret than applying for a patent if you can't bring that down, considering the speed with which the technology is moving forward.

Do you have an affirmative program to bring down, to address specifically biotechnology where these are complex, they require a completely different group of examiners, and, as of right now, the numbers are not encouraging, they are discouraging?

Mr. DUDAS. We do have a plan that gets specifically to biotechnology, but it is just a part of the greater plan. As you mentioned, examiners have to have specific skills in the art, and so as we look at particularly hiring, which is the primary way, and the most important way and the most logical way now to bring down pendency, we target hiring, and we target for the particular areas.

The electrical arts are where we are having the biggest problems with pendency, but we are following very closely the biotechnology areas as well.

So the answer is yes, we do that, how we are hiring in the biotech areas.

Mr. ISSA. And along a similar line, but a different pet subject, if you will, plant patents. You have a stated policy that you're trying to reach, as much as possible, possible worldwide uniformity. Our trade agreements are trying to do that. And yet at the present time, you have gone with an existing standard to the present standard, you have gone against the rest of the world on plant patents and interpreting their validity.

My understanding now 3 years ago under your predecessor was, look, Congress has to act. You guys will have to fix this. But then, at least my piece of legislation put forward, everybody said, well, we're not sure. We're going to remain silent on it.

This Committee, I think, is looking to you to say either, yes, you need this piece of legislation, and, yes, it will make—because my particular bill very much simply says we're going to adopt the same standard as the Europeans for plant patents.

My question is, if you want to make it the same, can you look at that bill, and can your office stop sitting on the fence post, and say, yes, this is exactly—this bill will enable us to do what our stated mission is, which is to find uniformity? And if not, if there is something wrong with it, if your office could come back to us and say, hey, look, we want to change the rest of the world, so here is how we would like the law written, and then we will go try to change the rest of the world. I don't object to that. I just find it hard to reconcile.

Mr. DUDAS. Well, on the one hand—no, I am kidding.

Mr. ISSA. By the way, you had this while you were here, so this is not new. You used to be on my side.

Mr. DUDAS. What I can tell you is, when you say can we come back and give you an answer, can we tell you what the Patent and Trademark Office believes is the right thing to do, yes, we can and we will. And I pledge to you we will do that.

Mr. ISSA. I think I may actually get done early.

Mr. Chairman, I will yield back.

Mr. HOSTETTLER. We will be happy to take the time. Thank you, Mr. Issa.

The gentlewoman from California, Ms. Lofgren, is recognized for her questions.

Ms. LOFGREN. Thank you, Mr. Chairman; and thank you for holding this important hearing.

I am intensely interested in the Patent Office. As the Chairman mentioned in his opening remarks, I consider your work to be among the most important to competitiveness in our country; and while we all have questions and concerns, I don't want it to detract from the intense value I assign to the work that you do. I am probably one of the few Members of Congress that, when I go home and have town hall meetings, I actually get questions about the Patent Office from my constituents.

We do have concerns, and the other Members have mentioned it, about the rework issue. At 26 percent, that is, you know, a quarter of the Office's work. I am concerned about what percentage of this rework is continuation applications and what might be done about that or whether something should, in fact, be done about the continuation of a role in the rework issue. Could you address that?

Mr. DUDAS. Absolutely. Thank you.

Right now, we are at—this year, we project about 27 percent—27.8 percent of our applications are continuing applications; and, as Mr. Van Horn pointed out in his testimony, there are legitimate reasons for continuing applications. There is no question.

But there are two reasons for continuing applications. There are illegitimate reasons for continuing applications, or at least concerns that people file continuing applications so they can find out how the market develops and then they can develop around that product or somehow block others. So the illegitimate uses or potential uses are very important.

From the Office's perspective—I show you those charts—even legitimate uses of continuations, I think the question that we have is, essentially, the legitimate uses, as I interpret them, are do-overs. There may be a mistake. There may be something else that occurred. We need to do this again. But there is priority in getting those applications processed; and, as far as application date, that is a concern.

How many do-overs can you have? Right now, there are an unlimited number of do-overs. And where else in our legal system—where else in any system—do you have the opportunity for unlimited do-overs? So is the burden of proof wrong now that unlimited do-overs is the right place to start and do something to the other side, or should there be some level of how you look at this where there might be some barrier or some level of where you might have to make a threshold showing for a level of continuation?

So that is something we think is worthy of study, and I—again, I offer the USPTO view because it is so much of our work. I don't believe anyone ever says to one client, yes, I am having your continuing application and someone else says, why is it taking so long for my application to get done? I doubt that people ever say, because we are busy doing all these other applications.

Ms. LOFGREN. Do you think you need additional authority from the Congress to deal with this?

Mr. DUDAS. It depends on—quite honestly, it depends on what actions are taken. Certainly it is a realm for policymakers and Congress to be looking at. But there are actions that PTO can take with continuations under the authority it has now.

Ms. LOFGREN. I want to touch on the issue raised by the Chairman which has to do with the obviousness standard.

I guess many of us have suffered from going to www.sillypatents.com and seen some things that are shocking. I personally believe, though, that we do have a problem on the obviousness standard. If you compare the application for patent load with the publication of truly innovative scientific workloads, there is a mismatch. I think the phenomena that we are seeing is that when the obvious standard is not met then individuals and more likely companies defensively go to patent things that really shouldn't be patented because, otherwise, they have an infringement exposure. So the workload goes up, and the ability to actually give the scrutiny is further deteriorated, and we need to interrupt that cycle in some fashion.

Earlier this year—and I am not suggesting that the ideas were the right ones, but I am wondering if we need to take a look at the obviousness standard itself or the criteria or something of that nature to help with that interruption. Do you have an opinion on that?

Mr. DUDAS. I think it is worthy—I think it is something your Subcommittee has been looking at, and it is worthy of looking at.

I think—again, when I think of the job that our examiners face, it is incredibly difficult; and I can tell from your question how well you understand the obviousness—and this is a term of art. It is not just someone feels something is obvious. So in talking to many folks from Silicon Valley and elsewhere, they recognize that our examiners are getting it right under the law. But they think that perhaps the law might have it wrong, and that is where I think it is worthy of discussion. It is worthy of—our examiners have found situations where they feel that perhaps there should be some prior art out there, but there is not, and I think that is what people are looking at. So I think it is appropriately before the Subcommittee and much can be done.

I just want to note that, as you point that out, that there are elements where I think our examiners do a fantastic job following the law. I think your question is do we need to look at how that is applied and how the law is applied. I think that is worthy of your consideration.

Ms. LOFGREN. Thank you.

Mr. SMITH. Thank you, Ms. Lofgren; and, actually, you anticipated a couple of questions I was going to ask. One is on the amount of rework, which I think we just addressed.

But, Mr. Van Horn, I wanted to ask you a question on another subject, given your three decades of experience at PTO; and in fact I think Mr. Stern mentioned it. But the problem, if that is the word for it, is the turnover and what you would recommend for a higher retention rate within the PTO?

Mr. VAN HORN. I think at least a NAPA report and perhaps even a GA report mentioned a number of items you could do to enhance the status of an examiner, enhance their salary compensation. I think they have, one, a good job to start with; and more money is not going to make a bad job but a good job. They have good working conditions, and I think they need the supervision and training commensurate with the talents that each individual brings to the office.

I think many of the hires these days are very talented people, but, basically, they are not getting the kind of training and supervision that would permit them to advance and indeed make a valuable contribution in a short period of time.

Mr. SMITH. Okay, Director Dudas, I want to give you the last word or at least a legitimate word when it comes to treatment of employees. You have heard what Mr. Van Horn said a few minutes ago. Mr. Stern, in my judgment, actually was more critical in his verbal testimony than he was in his written testimony. Do you want to respond to some of those observations about the way the employees are treated.

Mr. DUDAS. Absolutely.

I think—first off, I do think we have the greatest employees in the world. I have had the opportunity to talk to folks that have been before other patent and trademark offices and have said that we do have the greatest employees in the world.

The job is very difficult. They are highly professional folks. And we have been asking for more. Congress has been asking for more, and we have been asking more as well. I will say I think, when we talk about the attrition, the data that we have looked at, we want to solve that problem. But I want to put it in context of the fact that when we look at the corporate leadership councils, looking at private sector, first year attrition is 42 percent; second year attrition is something like is 20.8 percent.

So putting that in context in this area, what we want to do, though, is we want to make certain that we make the environment in our office the right environment for examiners. So we are looking at better ways to communicate, better working with examiners.

I will also say that 57 percent of our examiners work above their goals. Over 57 percent produce more than 110 percent of their goal. Of those examiners, more than 95 percent of them get a commendable or outstanding rating. I think maybe we are making it sound as though our examiners are not producing at the level; they are having difficulty producing at the level. But when you see goals of 110, 120 and 130 percent and having 57 percent reach it, it shows the professionalism of those employees.

Mr. SMITH. One last question. This goes to fee diversion, a subject that we all care about. We passed a bill last year that I introduced that actually got through the House but not the Senate try to eliminate fee diversion. I, frankly, think just about everybody supports eliminating fee diversion except for a few appropriators in the Senate. But be that as it may, this year the amount the Administration has requested for the PTO budget I think comes pretty close to equalizing the amount that would be generated by fees. That is not to say we shouldn't continue to try to end fee diversion, but would you say that you are getting an adequate budget for your purposes this year?

Mr. DUDAS. Short answer is yes. The slightly longer answer is, you are right. The President's budget didn't have diversion. This year's doesn't have—gives us our full funding.

It looks as though so far in the process next year—and that is the difference between status quo hiring, which is attrition replacement, and being able to turn that corner if we can keep applications at 6 percent—not that we are trying to keep them down—but if they stay at 6 percent. So yes is the short answer.

Mr. SMITH. Thank you, Director Dudas. I know the gentleman from California has some more questions as well, and he is recognized.

Mr. BERMAN. Thank you very much. I am tempted to ask, would you be allowed to say no?

Mr. DUDAS. I would be allowed, but you just wouldn't see me again. I would be allowed. Yes.

Mr. BERMAN. I will pursue with you personally this inter partes reexamination issue. It is important, but it is narrow.

Your saying 57 percent of the people exceed the quotas doesn't totally answer the question. It—at least for me it doesn't. It doesn't necessarily prove the quotas that have existed since 1976 are the right approach because there are three alternatives one can draw from that as to the group that exceeded their quotas. One is they worked a great deal of uncompensated overtime. The second is they cut corners and thereby jeopardized—faced with the notion of meeting their quota or doing a good job, they chose—I don't want to be harsh, but it is a terrible pressure you are under—but they chose to pursue the quota as the highest priority and perhaps didn't get to pursue some of the things they would have liked to have pursued to raise quality; and the third is they are really quite impressive, incredible people who did a great job and understand real quickly and came to these decisions.

I just detect—my own—from my knowledge of you from here in the office, you are not Simon Legree, I don't think; and I am just wondering if there could be a little more communication between you and the employees in the context of what is life really like under this quota system? Because you have got—it just—I understand the abilities to search better and all of this and—by the way, the reforms we want, which we think will improve quality, will also create new procedures and post grant oppositions and third-party reviews which maybe cut down on search. Because if you can get third-party submissions of prior art, maybe that things come to an examiner quicker than they would if you guys go out and search for it.

But I am just wondering if there—it seems to me like there is a bit of a problem festering here that we should—we want to be sensitive to, and I just encourage you to take a look at it.

Mr. DUDAS. The answer to your question is absolutely yes. There is much room for more communication. There is much room to be talking more.

Ron and I had the opportunity to meet recently. I go to union meetings, and I have actually asked our commissioners to make certain that they are having monthly meetings with the unions and also weekly meetings, at least once a week outreach, myself included, making certain there is outreach.

Probably one of the best places I get the best information to help me manage that office is in the gym, talking to examiners, finding out how they feel, what is going on. But we are instituting a number of ways that we can more normalize that and make sure that message gets down not from the 10th floor where our senior level managers are——

Mr. BERMAN. Is the gym in Crystal City?

Mr. DUDAS. The gym is in Alexandria.

Mr. BERMAN. That is not the new leased space there.

Very good. Mr. Chairman, thank you.

Mr. SMITH. Thank you, Mr. Berman.

The gentlewoman from California, Ms. Lofgren, is recognized for questions.

Ms. LOFGREN. Thank you, Mr. Chairman.

I just want to touch again on the obviousness issue, and ask—actually, request Mr. Dudas to take a look at two suggestions that were made to me by some academics, some law professors on the obviousness issue. I got a critique from the American Intellectual Property Law Association that was negative, and they may well be right. But what I am looking for—if it is not this, and maybe this isn't it, what would be a good idea? And if you have—I will be happy to send both the suggestions sent to me by the law professors and AIPLA's analysis. But if you have some comments and some alternatives that you think we ought to look at, I would very much value that. Actually, I will send it to all the witnesses, if they would look at that.

Finally, I want to talk about user fees. In a rare show of unanimity on the House Judiciary Committee I think we voted unanimously on several occasions to oppose the diversion of fees. The Chairman is right. This year we are not diverting the money that outmatches the fees, but I have no real confidence that that will always be the case. And in fact, historically, it hasn't been the case. I just can't think how long that is to do. It is a special tax on inventiveness. It is just completely the wrong thing to do.

So one of the things I am thinking about is how—we had a bill that would have worked. It actually didn't make it all the way through the legislative process. The National Academy of Public Administration recently suggested another alternative, which is that PTO be reorganized as a wholly-owned Government corporation under the Department of Commerce to allow it to borrow its own money, set its own user fees, and keep them without diversion, issue its own regulations. What do the witnesses think of this suggestion as an alternative to the measure passed by the House to end diversion? Mr. Van Horn?

Mr. VAN HORN. Well, certainly, as a member of the NAPA panel I would support the suggestion. I think it is a good idea as one way of sort of putting in the hands of the PTO its own destiny, more control over the management of its resources.

Mr. STERN. The employees have always been concerned about remaining inside the civil service system so that there are opportunities to appeal adverse decisions against you.

In the past, taking us out of title 5 has been a major concern for folks; and, as a consequence, my organization has been opposed to the establishment of a corporation. But of course we are very much in favor of the agency getting to spend all its fees. That is an unfortunate tax on inventors when fees are diverted. They are paying for a service, and they deserve to get what they are paying for.

Ms. LOFGREN. Let me ask you this. The Post Office used to be part of the Government. Now it is a corporation, and yet there is this whole civil service structure that was imposed on that. If there was something of that nature—I don't want to get too specific—that addressed the civil service nature, how would the employees feel then is your best guess?

Mr. STERN. I think they would be very comfortable. Remaining inside the civil service system is very possible even if the agency has a corporate structure or a somewhat independent structure, and that would reassure folks that they will be dealt with fairly and equitably.

Ms. MITTAL. While the issue of lack of fees has come up in various audits that we have done of PTO, we haven't really looked at the whole structure of the organization so I think we would be unable to answer that question right now.

Ms. LOFGREN. Are you allowed to answer, Mr. Dudas?

Mr. DUDAS. I can't give you an official Administration position. What I can tell you is we would welcome a debate on that. It is an idea that has been around since the Taft administration. It came up in the Johnson administration. And this Subcommittee has——

Mr. SMITH. It is probably lost.

Mr. DUDAS. —and this Subcommittee has looked at that.

I will just point out it is considered by some internationally a best practice. Canada has a situation closer to that. Mexico has a similar—and while we are asked to operate like a business and should operate like a business, we have to be cognizant that we are Government as well. But keep in mind all the fees we collect today—when I show you those pendencies, all the fees we collect today will likely go for examinations that occur in the future. So managing money would be—there are a lot of areas where that could be helpful.

And it might sound like Ron and I have switched seats here, but when I look at title 5, one of the issues is making certain that there are protections and appropriate protections in place but also making sure we can pay market value for examiners, possibly paying higher than what title V has.

Ms. LOFGREN. There would bean opportunity then. We are competing in a very tough economic market for very important skill sets, and that would give an opportunity to really compensate. Thank you.

Mr. SMITH. Thank you, Ms. Lofgren, and thank all of our witnesses today as well. This has been very informative and instructive. We appreciate all the work that is being done at the PTO and know that it will continue and improve.

We stand adjourned.

[Whereupon, at 2:20 p.m., the Subcommittee was adjourned.]

APPENDIX

MATERIAL SUBMITTED FOR THE HEARING RECORD

PREPARED STATEMENT OF THE HONORABLE HOWARD L. BERMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA, AND RANKING MEMBER, SUBCOMMITTEE ON COURTS, THE INTERNET, AND INTELLECTUAL PROPERTY

Mr. Chairman, thank you for scheduling this oversight hearing of the Patent and Trademark Office operations and analysis of the GAO and NAPA reports. It is especially appropriate that we do this now, as we move forward with the patent reform bill next week, which will likely effect the Office.

The U.S. patent system is the cornerstone of innovation in our society. Throughout its more than 200-year history, the Patent Office has provided incentive for inventors to innovate by providing them with the protection for their ideas in the form of patents and trademarks. Today, intellectual property-based industries represent the largest single sector of the U.S. economy and the USPTO is at the core.

In recent years, however, the USPTO's patent operation has come under criticism. Charges of poor quality patents and ever-increasing pendency of applications diminish the stature of the patent system and reflect poorly on the Office's product. I commend the Patent Office for implementing many of the initiatives cited in its 21st Century Strategic Plan. Nevertheless, challenges remain.

The first challenge, unfortunately, is one that the USPTO cannot influence—but instead is our job, here in Congress. All the witnesses agree that we must stop fee diversion. Between FY 1992–2004, the Office lost access to $741 million of the fees it collected. A lack of funding is cited in multiple reports as the primary reason for increased pendency and for not implementing vital quality initiatives. We cannot continue to allow a perverse situation where we kneecap U.S. technology and economic leadership by diverting user fees to wholly unrelated products. That is why many of us here today are original co-sponsors of the "Patent and Trademark Fee Modernization Act of 2005," to once and for all put an end to this true tax on innovation.

However, the fee bill is only the starting point. In order to improve the operations of the Patent Office, we must make a number of fundamental reforms to the system.

Patent pendency, the amount of time a patent is pending, now stands on average at more than two years. Currently, the backlog of applications awaiting a first review numbers 600,000. Without change to the system, this current level is expected to grow to over 1,000,000 by the year 2010.

If you look solely at the most complex, cutting-edge technologies, where patent protection may be the most critical, average pendency is more than three years. The light-speed pace of innovation makes this simply unacceptable—many cutting-edge technologies will be long obsolete by the time the patent is granted.

Part of this backlog is due to growing demand for the Patent Office's product—the Patent Office receives record numbers of applications each year. The more troubling factor leading to the ever-increasing backlog of patent applications is that USPTO simply does not have enough experienced examiners to handle the demand.

I applaud USPTO for taking steps to increase the size of its patent examining corps. However, attrition remains a serious problem. Only 45% of the Patent Office workforce has five or more years of service. In an agency where it takes roughly 5 or 6 years before an employee becomes fully productive, this is a very troubling statistic.

One other major issue with which the Office struggles is the quality of patents. The current production quota system, known as the "count system," has not been reevaluated since it was first introduced in 1976. The amount of information through which examiners must search to find relevant patent literature has exponentially increased and applications are growing ever more complicated, yet examiners still work under 1976 assumptions. Even with advances in the deployment of information technology, a number of studies have indicated that examiners today simply do not have enough time to do their job properly, and have been encouraged to take a number of shortcuts. Not surprisingly, then, the quality of patents suffers. Although USPTO has instituted some quality initiatives in recent years, it seems there is still a long way to go.

There are additional quality measures and changes to the patent system as a whole that we hope to address in the "Patent Reform Act of 2005." Through allowing submissions by third-parties, harmonization with international practice, amending the inter-partes reexamination system, and creation of a post-grant opposition procedure, it is our hope that the bill will further enhance the quality of patents and increase confidence in their integrity. I look forward to the testimony here today, as it will undoubtedly impact the important legislation next week. I also look forward to working further with the USPTO and patent stakeholders to arrive at a truly innovative reform to the patent system as we know it.

Thank you Mr. Chairman. I yield back the balance of my time.

PREPARED STATEMENT OF THE HONORABLE JOHN CONYERS, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN, AND MEMBER, SUBCOMMITTEE ON COURTS, THE INTERNET, AND INTELLECTUAL PROPERTY

According to a March 2005 PEW Internet & American Life Project survey, young adults continue to be the largest group of Internet users who share files with others online. File sharing among students can provide many beneficial uses in education, research, and professional development. Unfortunately, college students have exploited the intended use of the peer-to-peer network by trafficking in music, movies, software, video games, and other copyrighted material without permission. While the Supreme Court unanimously held this past summer in the *Grokster* case that the file trading companies can be liable for their misconduct, we cannot turn a blind eye to the users of such software.

Aside from the issue of copyright infringement, this illegal use of peer-to-peer networks can lead to invasions of student privacy, viruses, and other potential security threats to the university's network.

The content industry is stepping up its battle against digital copyright piracy on college campuses, encouraging higher education leaders to monitor their students and impose restrictions on violators. On the other hand, monitoring raises privacy concerns and could chill the use of peer-to-peer technology that can otherwise have valuable academic rewards. I also would be concerned that monitoring could turn university officials into spies, thus creating an atmosphere in which the First Amendment and privacy rights of students are significantly devalued.

Because piracy has proven to be a lethal threat to the content industries, we must address the legitimate concerns of creators. One approach to reducing peer-to-peer piracy on university campuses that does not require monitoring seems to be working: providing a legal alternative for students to access music, films, and other media while educating students about the importance of copyright issues. Two major universities in my home state, the University of Michigan and Michigan State University, have taken the lead in this approach.

After the University of Michigan inked an agreement with Cdigix, students were able to choose from a wide variety of media and entertainment services for only a nominal monthly fee. Because of the University's agreement with Cdigix, its acceptable use policy, and its education campaigns on copyright infringement, the Recording Industry Association of America cited the University as a model for how universities should combat illegal file sharing.

At Michigan State University, the University has implemented the multi-tiered approach of information campaigns, an acceptable use policy, and technical measures to prevent illegal file sharing. These measures have led to a 75% reduction in the monthly rate of Digital Millennium Copyright Act violations on campus. In addition, MSU is conducting advanced discussions with venders such as Cdigix to provide a legal avenue for students to access digital entertainment. MSU's strategy strikes the appropriate balance between preventing illegal sharing of copyrighted files and respecting the privacy of personal communications over the University network.

By providing legal alternatives to file sharing and through education, universities can and will continue to teach students to make good decisions regarding online entertainment. Furthermore, by becoming familiar with services like Cdigix, students will develop the habit of paying for music that will extend beyond the university setting.

RESPONSE FROM ANU K. MITTAL, DIRECTOR, SCIENCE AND TECHNOLOGY ISSUES, U.S. GENERAL ACCOUNTING OFFICE (GAO), TO QUESTIONS SUBMITTED BY THE HONORABLE ZOE LOFGREN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA, AND MEMBER, SUBCOMMITTEE ON COURTS, THE INTERNET, AND INTELLECTUAL PROPERTY

Question Received from Mr. Praveen Goyal on 9/9/2005:

At yesterday's oversight hearing, Rep. Lofgren asked each of you to submit any comments you might have on the obviousness standard in current law, and whether and how it should be changed. In particular, she sought your comment on a particular proposal suggested to her by academics. Their proposal was that the "suggestion to combine" test be eliminated, and 35 U.S.C. section 103(a) amended by adding the following:

"Subject matter shall be found obvious even though the prior art does not contain any explicit or implicit suggestion or motivation to combine what was not identically disclosed or described, if by the effective filing date a person having ordinary skill in the art would have found the subject matter sought to be patented to be obvious considering the technical differences from the prior art. Patentability shall not be negatived by the manner in which the invention was subsequently used or commercialized."

A copy of a memorandum setting out this language is on the record in the subcommittee's June 2005 hearing on H.R. 2795, available at http://judiciary.house.gov/media/pdfs/printers/109th/21655.pdf <http://judiciary.house.gov/media/pdfs/printers/109th/21655.pdf> .

Rep. Lofgren would welcome any input you have on this proposed new obviousness standard.

GAO's Response Provided by Email on 9/12/2005:

GAO has not conducted any reviews of the obviousness standard and therefore, at this time, we are not in a position to comment on whether or not it should be changed.

EXECUTIVE SUMMARY, *U.S. PATENT AND TRADEMARK OFFICE: TRANSFORMING TO MEET THE CHALLENGES OF THE 21ST CENTURY,* A REPORT BY A PANEL OF THE NATIONAL ACADEMY OF PUBLIC ADMINISTRATION FOR THE U.S. CONGRESS AND THE U.S. PATENT AND TRADEMARK OFFICE, 2005, SUBMITTED BY THE HONORABLE LAMAR SMITH

EXECUTIVE SUMMARY

The U.S. Patent and Trademark Office (USPTO) is a complex "knowledge worker" agency and the fulcrum of the U.S. intellectual property system. Its mission—grounded in the U.S. Constitution—is to ensure that the intellectual property system contributes to a strong domestic and global economy, encourages investment in innovation, and fosters an entrepreneurial spirit.

Under the close scrutiny of its stakeholders, academia, its counterparts around the world, Congress, and the courts, USPTO must accommodate a burgeoning interest in securing property rights and changing legal interpretations of patent law. It must also deal with substantial external volatility—particularly the U.S. economy and funding levels. With all of these variables and pressure points, USPTO attempts to balance the tradeoffs between enhancing quality and maximizing production and does so within the context of the federal workplace and its myriad requirements.

With a $1.7 billion proposed fiscal year (FY) 2006 budget, derived from fees for services provided, USPTO needs the flexibility to operate with the incentives and acumen of a private business—with full accountability to Congress and its users. In 1999, to provide USPTO with added management flexibilities to achieve its mission, Congress designated it as one of only two federal "performance-based organizations." This designation provided additional flexibilities in budgeting, human resources, procurement, and other administrative areas, but not those needed for making long-term business decisions. In 2003, USPTO issued a modified *21st Century Strategic Plan,* which described its vision to create a quality-focused, productive, responsive organization supporting a market-driven intellectual property system. It seeks to transform itself over the next five years guided by three strategic themes—(1) agility, (2) capability, and (3) productivity, with quality embedded in each theme.

To help ensure that USPTO is making progress in implementing its strategic plan and is on the right path to transformation, the Chairman of the House Appropriations Subcommittee on Science, State, Commerce, and Justice asked the National Academy of Public Administration (Academy) to examine USPTO's organization structure and its work processes. The Academy Panel has reviewed and assessed organizational and human capital structures, the timeliness and quality challenges USPTO faces in processing patent applications, and whether it has the appropriate skills needed within its staff.

CORPORATE STRUCTURE AND CULTURE

As a performance-based organization, USPTO has more flexibility than a traditional federal agency, but it still does not have the flexibility to make long-term business decisions, the borrowing authority to help meet multi-year capital needs, or access to all of its user fee revenues. While organizational form does not guarantee efficient operations, one that does not permit a business-type agency to apply its resources to meet changes in market demand (for USPTO, the changing volume of patent applications) can create inefficiencies and disincentives.

The Panel believes that USPTO's structure has created such inefficiencies. The demand for patents is closely tied to the U.S. economy and its fluctuations. A corporate structure would enable USPTO to respond more quickly and effectively to workload, yet remain accountable to Congress, the President, and stakeholders.

> **Accordingly, the Panel recommends that Congress create the U.S. Patent and Trademark Corporation (USPTC) as a wholly owned government corporation under the policy direction of the Secretary of Commerce, with the appropriate authority to borrow, set fees (within parameters Congress would set), and issue its own regulations.**

Past Academy reports have tended to recommend a Chief Executive Officer but not a governing board for government corporations. There are no stockholders for a board to represent. Also, some government corporations have not been well-served by large boards. Therefore, the Academy Panel believes an Advisory Board or Advisory Committee would better serve USPTO rather than a formal governing board of directors and believes such an advisory body could provide guidance in terms of stakeholder interests.

A key feature of USPTO's culture is that its work is far more geared to measurable production than most federal agencies with a highly educated workforce, and the patent workforce is also highly unionized. The consequence is that nearly all aspects of work process and workforce management are negotiated. Given that management and its largest union have been at impasse for decades, proposed reforms may not be accepted with alacrity even if they make sense, because they require negotiation. This is not a healthy organizational culture.

> **The Panel recommends that USPTO develop strategies to make theirs a more positive, collaborative organizational culture.**

These efforts should start with an assessment of the current culture, probably by an external group, and should involve employees and managers. Top management should continually reinforce that USPTO is a good employer; its employees receive excellent benefits and enjoy a very flexible work schedules, and work in state-of-the-art facilities.

It is essential that an organization's culture support its mission, and a culture cannot be changed overnight. Cultural change has costs, such as time away from production for focus groups or training, consultant fees, purchasing materials and allowing staff time to read them, or producing a video on how the organization plans to institute change. The Panel believes the long-term benefits will far outweigh the costs.

HUMAN CAPITAL MANAGEMENT SYSTEM

With only 45 percent of the workforce having five years or more of service, USPTO lacks adequate numbers of seasoned examiners to meet its mission challenges. The current human capital system will become an increasing liability to USPTO as even larger portions of the federal workforce (the Departments of Homeland Security and Defense) implement their new personnel systems and demonstrate the benefits of human capital agility in the federal framework. Those agencies with more constraints will likely be less competitive in the recruitment marketplace.

The Panel believes that the General Schedule pay system impedes USPTO's ability to attract and retain employees. With a personnel system tailored to its needs, USPTO could adopt a pay scale or performance-based pay system that could improve recruitment and reduce attrition, thus keeping more experienced employees rather than training them for several years before they leave to oin law firms or other entities as patent attorneys or agents. A performance-based pay system could also expedite the collective bargaining process.

The new DHS personnel system, with a labor-market based pay structure and performance-based pay increases, is in place. While unions have raised issues about the framework for the labor-management relationship, the independent Homeland Security Labor Relations Board provides a valuable vehicle for the quick resolution of all bargaining matters and disputes and ensures continued focus on agency mission. Aspects of this system could be a model for a tailored USPTO personnel system. The Panel believes that if, and only if, USPTO receives congressional authority to develop a more flexible personnel system, it should not be reluctant to pay rates that are substantially above General Schedule levels. It would be far more efficient, for the agency and patent applicants, to retain patent examiners rather than to lose half the number hired within a short period of time, as is the case in most fiscal years.

> **The Panel therefore recommends that USPTO work with Congress and OPM to develop an impasse resolution system that permits prompt renegotiation of work processes and pay rates.**

TIMELINESS AND WORK PROCESSES

High performing organizations constantly struggle with using their limited resources efficiently while at the same time ensuring the delivery of high quality work. USPTO's strategic plan acknowledges the importance of issuing high-quality patents in a timely manner. It is a substantial challenge particularly due to funding volatility and the backlog of patent applications.

Pendency is the key measure that USPTO uses to assess the timeliness of processing patent applications. First-action pendency is defined as the time (measured in months) from when an applicant files an application and USPTO makes a preliminary decision about whether to issue a patent. Although first-action pendency averages 20.2 months (up from 7.6 months in FY 1993 and 13.6 months in FY 2000), examiners spend only about 20 hours on average reviewing a patent application. First-action pendency includes time an examiner is not reviewing an application—primarily time in the queue. Pendency varies by the subject area of the application. For example, in FY 2004, it was 31.4 months for the communications area, and 15.2 months for the mechanical engineering, manufacturing, and products area.

In part, conditions beyond USPTO's control—the volatility of the U.S. economy, the concomitant but sometime unexpected increase in applications, and the consequences of not having access to all patent application fees—have created today's massive backlog of patent applications (more than 830,000, up from 244,646 in 1993). Between FYs 1992-2004, USPTO did not have access to $741 million of the fees it collected, the preponderance of which ($573 million) came from patent fees. This $741 million represents between 6 and 7 percent of the total funding available to USPTO during this period. The inherent nature of the appropriations process prevents some fees from reaching USPTO in unanticipated high-volume years because USPTO's budget is set months prior to the start of the fiscal year.

Simulations using USPTO's patent resource model, which the Academy Panel independently evaluated before using, show that if USPTO had been given access to these fees and applied all or most of them to patent staffing, it would have had the ability to consistently hire staff and FAOM pendency could have remained at an average of 11.4 to 12.6 months. USPTO's FY 2005 appropriation permits access to most of the patent fees collected, as does the President's FY 2006 budget request.

> **The Panel believes this recent action to allow fuller access to patent fees is a step in the right direction. To provide more funding certainty, the Panel recommends that Congress take steps to ensure that all fees USPTO collects during future fiscal years are available for its use without fiscal year limitation.**

To help USPTO achieve efficiencies in patent processing and possibly reduce pendency, USPTO initiated, at the direction of Congress, a pilot program to test outsourcing the "search" function of the patent prosecution process. The search function involves reviewing patent or non-patent literature for historical references to inventions that are similar to those in a patent application. USPTO estimates that about 20 percent of the total patent prosecution time would be saved if another entity conducted the search. The Panel recognizes that pendency cannot be quickly reduced by hiring new patent examiners. However, it has reservations about outsourcing, in part because the European Patent Office (EPO) previously had the search and examination functions done by different staff members and now has combined these functional responsibilities to achieve greater efficiency. The Japan Patent Office (JPO) began, in the mid-1980s, to outsource some searches because statutes did not permit them to hire more staff. JPO examiners work directly with searchers, most of whom are in a quasi-governmental entity, and the only searches outsourced are those that can be done in patent literature.

Questions remain about whether private search firms will be attracted to this type of work given the conflict-of-interest requirements or whether they can perform work at the same level of quality as USPTO staff. A thorough evaluation of the pilot program will be critical because the results will have an impact on USPTO's future business vision, which calls for leveraging search results from others—foreign patent offices, the patent applicant, and private contractors. Congress has required such an evaluation.

> **The Panel recommends, as part of the evaluation of the pilot, that USPTO examine the potential to outsource the search function to a federally funded research and development center that would work exclusively for USPTO.**

Such centers—which have more flexible hiring authorities—can secure the skills the agency needs, do not have a proprietary interest in the work, and have little incentive to breach the principles of confidentiality.

Eliminating unnecessary rework offers another opportunity to increase efficiency in patent processing. In 2004, 25 percent of examiners' work could be described as rework. Patent law allows a form of rework known as "continuations," which allow an applicant to request another review of the same invention that was included in a prior application—even if USPTO rejected the patent. Continuations provide an applicant a substantial benefit, because this second review skips the queue and receives the same priority for processing as the original application. This means other applicants wait longer for USPTO to review their applications. There are valid uses for continuations, but there are also indications that some applicants use them to "game the system." There are varied proposals to limit the use of continuations, either through congressional action or USPTO rule-making.

The Panel recommends that:

> **USPTO use every means possible to work with stakeholders to provide Congress with the necessary information to assist it in identifying the appropriate number of continuations that should be allowed.**
>
> **Congress amend patent law by establishing a specific maximum number of continuations that will be allowed for any patent application.**

Finally, worksharing (relying on aspects of the examination process that foreign patent offices have completed) also has potential to increase efficiencies in processing patent applications and reducing workload. Currently, USPTO, EPO, and JPO (the Trilateral Offices) annually receive almost 200,000 applications in common (more than half USPTO's annual volume of new filings). To achieve the goal of worksharing, the Trilateral Offices need to better understand each other's work methods, and each country needs to amend certain provisions of its patent law to accommodate worksharing. The need for greater collaboration is under discussion and, to some extent, is the driving force behind current patent law reform efforts. A 2004 National Academy of Sciences (NAS) report concluded that the United States, Europe, and Japan should further harmonize patent examination procedures and standards to reduce redundancy in the search and examination functions and eventually achieve mutual recognition of results.

> **The Panel strongly supports harmonization and recommends that USPTO work closely with Congress to provide it with the necessary information to amend patent laws to achieve harmonization.**

QUALITY

Patent quality is important because USPTO's decision on a patent application has economic spillover effects to other businesses and, more broadly, to competition and innovation. Thus, it is important for USPTO to conduct quality reviews during application processing and "get it right the first time" to prevent issuance of inappropriate patents, with their attendant litigation costs and adverse technological impacts. For the last 25 years, USPTO has assessed quality by determining whether the claims in a patent clearly meet the statutory criteria. To make this assessment, USPTO reviews between two to three percent of approved applications. The error rate from FYs 2000-2004 varied from a high 6.6 to a low of 4.2 percent. Although the error rate has remained fairly stable, several studies, congressional hearings, and scholarly articles report perceptions that patent quality has declined, particularly in areas of technology in which patents have only recently been granted, such as computer software and business methods. However, these concerns have not been quantified.

To respond to concerns that patent quality has declined, USPTO implemented several initiatives to ensure appropriate patentability determinations and improve the knowledge, skills, and abilities of examiners. The Panel believes many of these are consistent with sound management practices and acknowledges that additional quality reviews affect timeliness of application processing.

> **The Panel recommends that USPTO monitor the results of these reviews to (1) ensure that their implementation does not result in denying or seriously delaying patents to deserving inventors, and (2) identify the appropriate number of reviews needed to sustain quality without adversely affecting pendency.**

In addition to raising concerns about quality, others—the Federal Trade Commission, NAS, and scholarly articles—recommended various regulatory or legislative reforms to improve quality. USPTO's strategic plan includes one such reform—developing a new post-grant review process—which would reduce the volume of litigation by providing a new administrative opportunity to rule on patent validity. Though many stakeholders agree on the need for a new process, they differ on certain design elements. The Panel reviewed four major proposals for establishing a post-grant review process, including proposed legislation.

> **The Panel agrees with the provisions of the four proposals for post-grant review that provide for (1) administrative patent judges conducting the process and (2) an appeals option to the Court of Appeals of the Federal Circuit.**
>
> **The Panel recommends the following with regard to the other elements of a post-grant review process:**
>
> - **The grounds for a challenge be limited to patentability and not enforceability.**

- **Discovery be limited to cross examination on matters relevant to the grounds for review.**

- **Estoppel from further litigation be limited to those issues raised and resolved in the proceeding.**

- **The patent owner be permitted a single narrowing of any claims, with the addition of dependent claims on good cause shown.**

If a post-grant review system is adopted, the Panel recommends that USPTO compile data on the costs and benefits of post-grant review and *inter partes* reexamination, including the impact on patent quality. These data should help inform Congress about whether both systems should be maintained.

WORKFORCE AVAILABILITY AND SKILLS

USPTO places highly skilled knowledge workers—its patent examiners—in a production environment and measures their performance primarily in quantitative terms. Those who can work in this environment can receive substantial bonus pay, but the production system may be a contributing factor to high attrition rates.

In 10 out of 13 years, from FY 1992-2004, for every ten patent examiners hired, five left; many within the first three years. Because examiners become fully productive only after several years of USPTO work experience, it is essential to retain staff. USPTO does not systematically use exit interviews to determine why examiners leave, but senior USPTO staff attribute high attrition to:

- Pay in relation to the Washington, DC cost of living

- The lack of a real-world understanding about the job on the part of recent graduates

- The difference between the often-isolating and repetitive desk work of USPTO patent examination duties and those of research or bench science, for which many USPTO employees have trained

- The up-front career plans of many new employees, who use this USPTO experience as a stepping stone to law school, or, if already a lawyer, to a more lucrative private practice or employment opportunity in intellectual property

The Panel believes that USPTO is on the right track with:

- Bringing in new human resources management leadership so that USPTO can apply additional and improved techniques in recruiting and retaining staff

- Developing videos and better recruitment literature to more clearly explain the work to potential recruits and requiring personal interviews for all applicants to assess their overall competence and communication skills

- Using information gleaned from quality reviews of patent examiner work to help individual examiners improve their work

However, USPTO needs to do more, and the Panel recommends that it:

- **Systematically determine why patent examiners are likely to leave within their first three years with the office and determine if it can make accommodations to retain them**

- **Develop competitive recruitment programs (a "patent scholars program") to raise USPTO visibility on campuses and attract more of the best graduates**

- **Use more of the hiring flexibilities now permitted under its status as a performance-based organization and general federal personnel regulations**

While USPTO cannot hire its way out of its pendency problems in the short term, unchecked attrition of recent hires is at historical levels and will likely exacerbate the pendency problem and reduce the quality and consistency of patent determinations. An organization that so significantly affects innovation in the U.S. and around the globe needs to have and use the flexibility to deal with these challenges to optimize its performance. The Panel offers several recommendations to help USPTO deal with the problems of staff erosion, improve morale, and enhance the retention of experienced and technology-savvy examiners upon whom the system relies.